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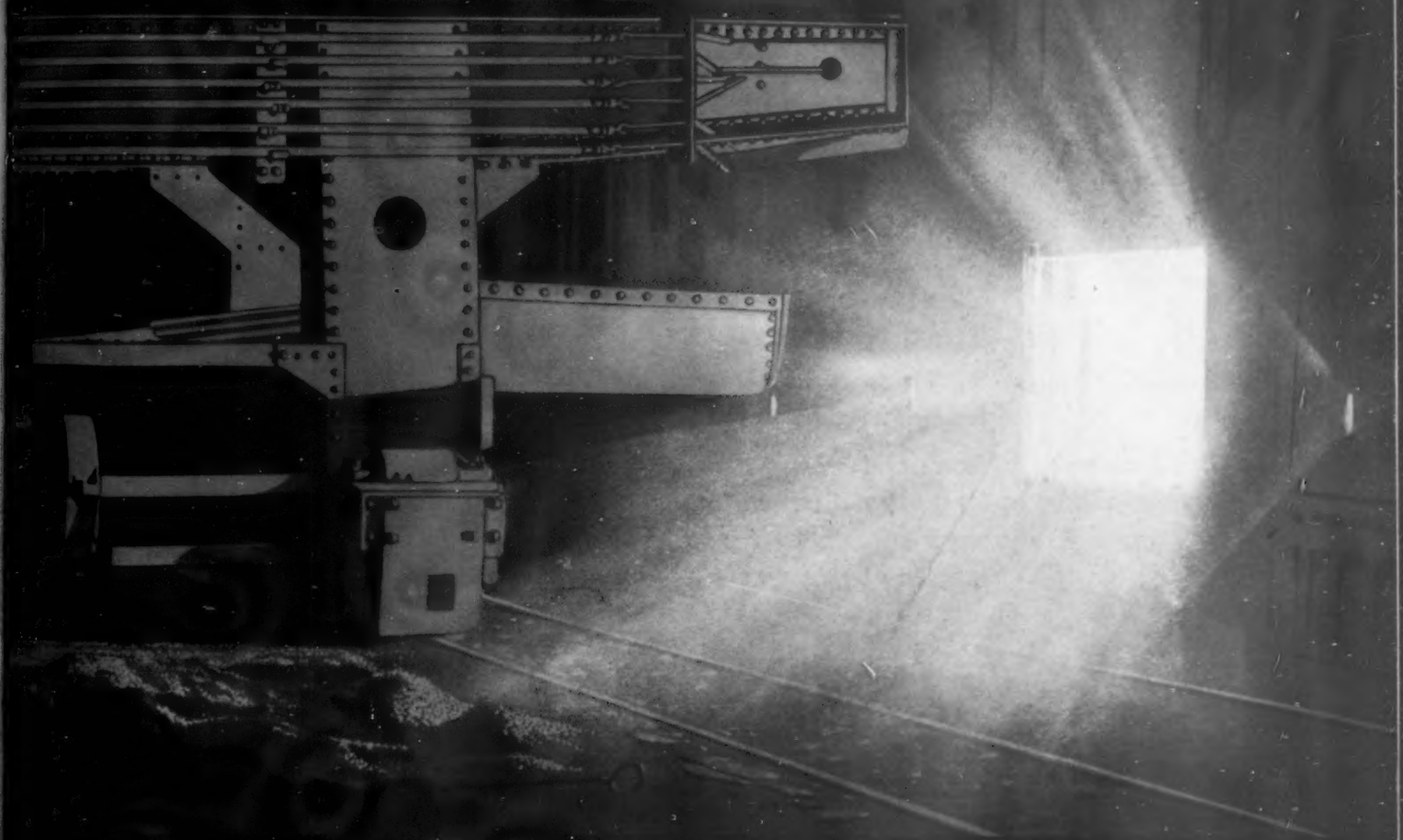

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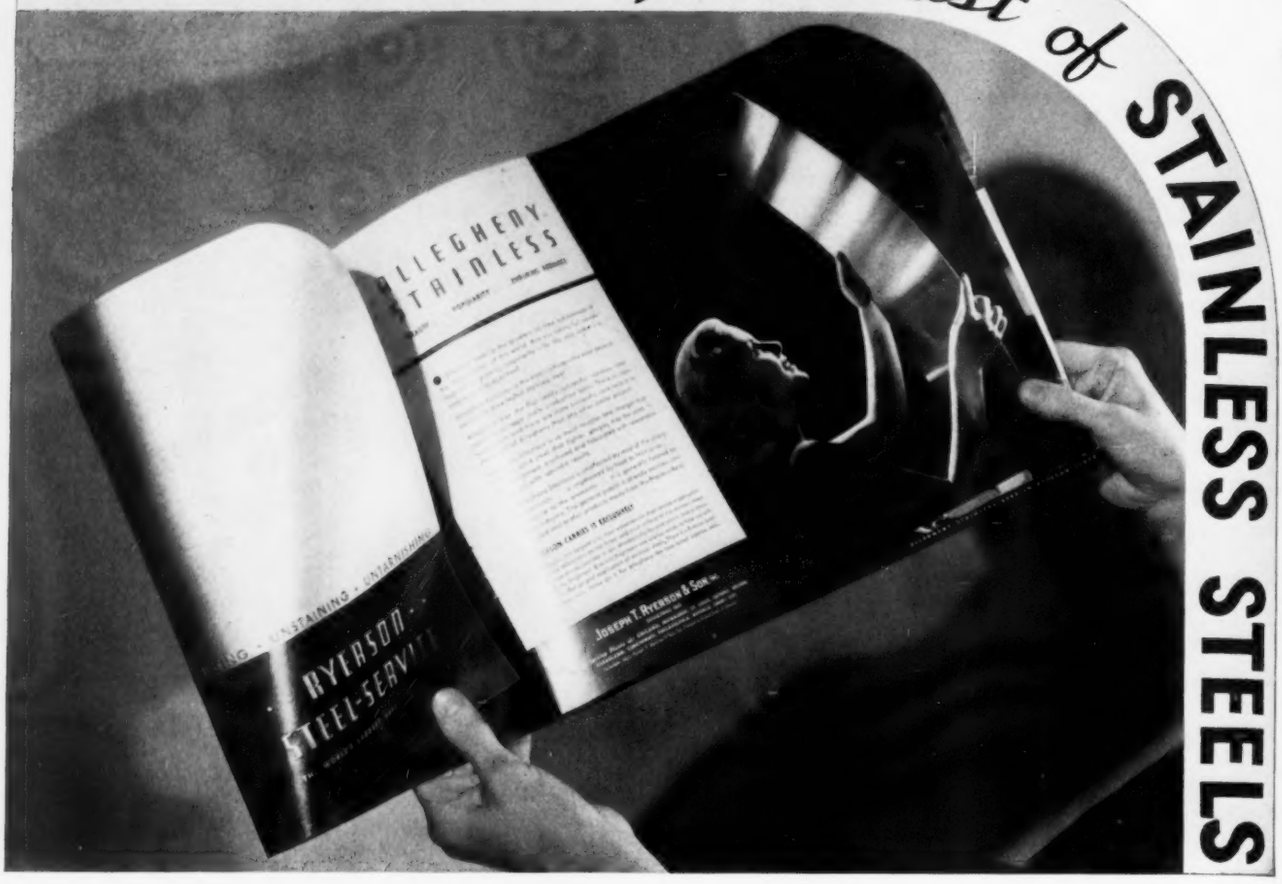
ALLEGHENY - *The Finest of* STAINLESS STEELS



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As the Editor Views the News

AFTER several months of study and investigation, the skeleton of the defunct NRA has issued a preliminary report on the steel industry. If anyone expected that it would help to solve any of the industry's major problems, he will be disappointed. The report (p. 24) covers familiar historical ground, points to significant changes taking place in the economic structure of the industry, touches upon price policies and takes a slam at steel's attitude toward professionally organized labor. We have read theses on the steel industry written by university seniors which rate above this report. What is more, they didn't cost the taxpayer a cent.

• • •

Ninety out of every 100 readers of STEEL will get a chuckle out of Mr. Stetson's brushes with the engineer's office of the United States war department. Mr. Stetson (p. 25) doesn't think much of the 'Quoddy tidewater power project. In fact, he refused to bid on it because he believes the scheme is "economically unsound." But Mr. Stetson's products were specified by a subcontractor, and in order not to "put an innocent party in the hole," Mr. Stetson sold him the products specified. However, he used the profits from the sale to publish a bulletin protesting against this waste of taxpayers' money. The correspondence makes good reading.

Grand Slam at Quoddy

• • •

Early reports of the earnings of industrial companies for 1935 show a gratifying reversal from situation of 1934. The first nine corporations in the steel industry to report enjoyed profits aggregating about $32,000,000 last year (p. 22), as compared with a deficit of $14,000,000 in the preceding year. This showing will be received enthusiastically everywhere except in certain Washington quarters. There, sooner or later, some misguided politician or bureaucrat will take the floor to denounce these profits as exorbitant. In the same breath, he may point to the great army of unemployed and demand —with impressive beating of breast—that industry absorb this army "or else." When politicians awaken to the fact that profits are a measure of industry's ability to furnish jobs and that profits are essential to recovery, then we will know that sanity is returning to the nation's capitol.

More Profits, More Work

• • •

Many readers have evidenced an interest in the amount of scrap used in steelmaking as compared to the amount of iron ore. Now an approximate answer is furnished by an estimate (p. 27) that during the 1925-1934 decade 193,000,000 tons of scrap was used in steelmaking against 399,000,000 tons of iron ore. The iron content of the ore is estimated at about 200,000,000 tons. In other words, the tonnage of scrap consumed is almost on a par with that of the iron in the ore. Realization that scrap and ore are on this basis will emphasize the increasing importance of scrap in the economic structure of this industrial nation.

Scrap Near Par with Ore

• • •

Few manufacturers require the elaborate paint circulating systems employed in several automobile plants (p. 40), but many who use paint extensively will find that the principles involved may be adapted to their requirements. The circulating system is the logical adjunct to the spray gun, which now has become a commonplace item of equipment in many establishments. . . . To build a good house for less than $5000 is the objective of scores of contractors, builders and fabricators. A Chicago company has announced a prefabricated house (p. 46), with steel frame, to be sold in the $2500 to $4900 price range . . . . The urge to reduce weight is apparent in the design of blast furnace equipment. A new bell operating rig (p. 58) reduces the load on the top structure materially.

Painting Is Mechanized

E. L. Shaner

Early Financial Returns Show 1935 Steel Profit $46,800,000

FIRST nine companies of the blast furnace, steel mill, and rolling mill category to report their earnings for 1935 show an aggregate net profit of $32,151,840. In 1934 the identical nine companies piled up a deficit of $14,147,710.

Since these nine represent 47,038,450 gross tons of steel ingot capacity, or 68 per cent of the country's total of 68,849,717 tons, the indicated net for the entire steelmaking industry last year is $46,800,000. This is $1.40 per ton of ingots actually produced.

All Now in Black

Of the integrated producers reporting thus far, every one has emerged from the red of the depression. The United States Steel Corp., which lost almost $22,000,000 in 1934, concluded 1935 with a net of $1,084,917. Bethlehem Steel Corp., second largest producer, increased its profit from $550,571 in 1934 to $4,291,253 in 1935.

Republic Steel Corp., third largest producer, bettered its position by almost $8,000,000 last year when it turned in a profit of $4,455,734, including the experience of the Corrigan McKinney Steel Co. for the last quarter.

National Steel Corp. and Inland Steel Co. ran almost a dead heat in being the most profitable operators. National with a capacity of 2,232,000 tons of ingots, made $11,136,451, while Inland, equipped to make 2,000,000 tons a year, profited $9,417,818. The figure for Inland includes the profit of its Ryerson subsidiary for the fourth quarter.

This comeback in the blast furnace, steel mill, and rolling mill group repeats the experience of important consumers and fabricators of iron and steel as shown in the accompanying table. The first few of this group to report show increased earnings or decreased deficits or a shift from the loss to the profit column.

Shareholders Get Cut

This improvement in earnings both in the producing and consuming group, redounds to the benefit of stockholders.

The United States Steel Corp. again declared a 50-cent dividend on the preferred, payable Feb. 28 to record of Jan. 30. The American Rolling Mill Co., which has not yet reported, will pay 30 cents on the common April 15 to record of March 14.

Inland Steel Co. has voted 75 cents on the common payable March 2 to record of Feb. 14, which compares with 50 cents regular and 25 cents extra in the two preceding quarters, indicating a regular rate of 75 cents.

Continental Steel Corp., on March 2 to record of Feb. 17, will pay 50 cents, which is the initial dividend on its common stock. Allegheny Steel Co. has declared a quarterly of 25 cents on the common and $1.75 on the preferred payable March 1 to record of Feb. 15.

Other dividends declared last week were: United Engineering & Foundry Co., 37½ cents on the common an $1.75 on the preferred, Feb. 15 to record of Feb. 4; Minneapolis-Honeywell Regulator Co., an extra of 75 cents in addition to the regular of 75 cents on the common, Feb. 15 to record of Feb. 4; Deere & Co., 35 cents, payable March 2 to record of Feb. 15, against the accumulation on the preferred, cutting the arrearage to $3.35; Bridgeport Machine Co., $1.50 on the accumulation on the preferred, Feb. 28 to record of Feb. 20, reducing the arrearage to $1.50; Westinghouse Electric & Mfg. Co., 75 cents on the common, an increase of 25 cents, and regular of 87½ cents on the preferred, Feb. 20 to record of Feb. 10; Hobart Mfg. Co., quarterly of 37½ cents on class A stock, March 1 to record of Feb. 15.

Youngstown Sheet & Tube Co. has again voted $1.37½ on its preferred.

To a large extent the profitable operations of the larger steel companies was responsible for their fine showing in 1935—at least fine after the lean depression years. The Steel corporation made $5,326,417 in the fourth quarter, compared with a deficit of $1,305,205 in the third quarter.

Bethlehem Net Is Tripled

Bethlehem's fourth quarter net was almost $2,400,000, or in excess of three times its third quarter profit. Republic more than doubled its third quarter profit; National reported a slight gain; Inland made a 50 per cent better showing. Complete details are to be found in the subjoined table.

The Steel corporation's net income from operations in the fourth quarter was $6,323,146 and for the entire year $8,261,647. After the preferred dividend paid in the fourth quarter there still was a surplus of $3,525,012, but for the entire year the deficit after dividends was $6,120,705.

Bethlehem's gross sales and earnings for 1935 aggregated $192,543,458, compared with $167,736,124 for 1934. Orders on hand Dec. 31 totaled $174,015,251, or $17,000,000 in excess of Dec. 31, 1934.

Commenting upon the business outlook, President Grace of Bethlehem said that he believed that his company this year would be doing very well if it were able to maintain its present rate of around 44 per cent. This, he pointed out, would represent an increase of about 10 per cent over last year. He pointed out that this year was a political year, and with an unusually active campaign ahead, sentiment was going to blow hot and cold. Politics was going to make for an agitated, unsettled situation, he believed.

Asked specifically about the demand for heavy steel, Mr. Grace stated there had been a little improvement, and that to date the railroads have accounted for most of it. He added that if general business keeps improving, railroad buying

How Important Metalworking Companies Fared

All Figures Are Profit Except Where Asterisk Denotes Loss

	Fourth Quarter 1935	Fourth Quarter 1934	Twelve Months 1935	Twelve Months 1934
Transue & Williams Steel Forging Corp., Alliance, O.	.....	.....	$55,350	*$99,636
Savage Arms Corp., New York	.....	.....	101,549	27,468
General Fireproofing Co., Youngstown, O.	.....	.....	395,406	172,490
Lunkenheimer Co., Cincinnati	.....	.....	216,487	73,457
Fostoria Pressed Steel Corp., Fostoria, O.	.....	.....	*8,500	.....
Pittsburgh Steel Foundry Corp., Pittsburgh	.....	.....	*26,235	*181,168
American Radiator & Standard Sanitary Corp., New York	.....	.....	11,230,000	1,455,227
Black & Decker Mfg. Co., Baltimore	$178,328	$52,818	.....	.....
Warren Foundry & Pipe Corp., Phillipsburg, N. J.	.....	.....	191,799	351,277
Wayne Pump Co., Fort Wayne, Ind.	.....	.....	†496,526	.....
A. M. Castle & Co., Chicago	.....	.....	348,407	††390,349

†Year ended Nov. 30. ††Included nonrecurring item of $86,041.

would probably make an important contribution to steel business this betterment in private ship work, tank- year. He also said there was some ers in particular.

Mr. Grace said he sees nothing to indicate important price changes one way or the other. He added that, of course, there were always variations in some lines, but that the price structure as a whole appeared stable. Asked if concessions in the Detroit district a few weeks ago had worked their way east, he said he had seen no evidences of it.

DAVIDSON COKE, IRON FILES REORGANIZATION PLAN

Davidson Coke & Iron Co., Neville Island, Pittsburgh, filed articles of corporate amendment Jan. 30 with the department of state at Harrisburg, Pa., which are pursuant to reorganization proceedings of the company at No. 19381 in bankruptcy before the federal district court.

Changes involve reclassification of the authorized stock of the company by revising designations, preferences, participating, optional and other special rights, by changing par value shares to no par and by changing all of the authorized three classes of stock into 900,000 no-par shares.

The plan also provides for an exchange of 512,735 shares of new capital stock for shares of the three classes outstanding and issuance of 55,394 new shares in various amounts to bondholders, noteholders and other creditors.

APPROVES FOLLANSBEE NOTES

Follansbee Bros. Co. trustees were granted permission in federal court at Pittsburgh, Jan. 27, to issue $500,000 of certificates of indebtedness necessary to the continued operation of the company's plants. It was stated at the hearing that the Follansbee, W. Va., and Toronto, O., plants are running at capacity and that the company is booking about $500,000 worth of sales monthly.

Here's Proof Business Was Better in 1935

WAS business better in 1935? Decidedly so, states the National Industrial Conference board, New York, after analyzing 1935 statistics, with late December estimated.

Increases in major industrial and commercial lines in 1935 over 1934 —chiefly in production—were 92.4 per cent for residential building, 86.1 per cent for machine tool orders, 45.0 per cent for automobiles, 30.6 per cent for steel ingots, 2.6 per cent for bituminous coal, 9.2 per cent for electric power, 9.3 per cent for petroleum, 19.5 per cent for total construction, 7.1 per cent for department store sales, 6.6 per cent for miscellaneous carloadings, 2.2 per cent for total carloadings, 45 per cent for total automobile production, 19.5 per cent for total building construction awards, and 12 per cent for retail sales.

Recovery has been slow in the commercial banking field. From Jan. 2, 1935, to Dec. 31, 1935, the earning assets of reporting member banks increased $1,413,000, but $1,182,000 of this increase was in United States security holdings. During the same period, deposits increased $3,026,000, of which demand deposits contributed $2,474,000, and deposits of other banks $1,187,000. Government deposits declined $736,000,000 during this period.

Ice Conditions Halt River Traffic

RIVER steamboats in the Pittsburgh district last week found extreme difficulty in barging coal, scrap, and various steel products, owing to the continued cold weather.

Ice has formed on the Ohio river consistently above Louisville, Ky., and in the Pittsburgh district running ice is from 4 to 8 inches thick, with many sections completely frozen over.

Steamers and barges are operating with difficulty on the Monongahela river, and on the Allegheny river at Pittsburgh the ice thickness ranges from 4 to 12 inches. This condition has had a marked effect on the heavy tonnage products which are barged over the rivers in this district.

A number of coal mines in the Fayette, Washington, and Greene county district late last week were facing idleness due to the heavy ice. These include Crucible Fuel Co., Hillman Coal & Coke Co., H. C. Frick Coke Co., and Vesta Coal Co. mines where operations depend upon the condition of the river for shipments. Several mines in the district, such as two of the W. J. Rainey Inc. units, were working four and five days last week, but shipments were being made by rail.

Barging of scrap from southern points for consumption by Pittsburgh and Wheeling district mills has virtually ceased, and in addition, many of the Pittsburgh mills have been unable to send out their usual monthly an semi-monthly tows of finished steel products for destination at southern warehouses.

A number of Ohio river steamboats have been moved to landings for repairs the past few days with wheels damaged in bucking the heavy ice on the rivers. In addition, several boats have been tied up on account of broken shafts.

When the final record of shipments over the rivers, as compiled by the federal engineers' office, is ultimately submitted covering January, it will undoubtedly show a marked drop from December. This report is expected out about Feb. 15.

Financial Timetable for Blast Furnace, Steel Mill and Rolling Mill Interests

All Figures Are Profit Except Where Asterisk Denotes A Deficit

	Fourth Quarter 1935	Third Quarter 1935	Fourth Quarter 1934	Year 1935	Year 1934	Ingot Capacity Gross Tons
United States Steel Corp.	$5,326,417	$1,305,205*	$10,234,413*	$1,084,917	$21,667,780*	27,341,900
Bethlehem Steel Corp.	2,396,026	701,616	411,099	4,291,253	550,571	8,980,000
Republic Steel Corp.	1,191,439	507,731	1,226,271*	4,455,734(a)	3,459,428*	6,129,000
National Steel Corp.	2,522,693	2,287,763	1,467,825	11,136,451	6,050,722	2,232,000
Inland Steel Co.	2,749,309†	1,810,203	550,073	9,417,818‡	3,729,889	2,000,000
Gulf States Steel Co.	119,350	58,443	44,468*	141,269	58,039*	400,550
Acme Steel Co.	438,155	384,479	168,431	1,757,972	1,035,563	.....
Scullin Steel Co.	.....	.....	.....	48,378*	304,926*	.....
Virginia Iron, Coal & Coke Co.	28,207*	.....	21,603	85,096*	24,682*	.....
Total	$14,715,182	$4,445,030	$9,886,121*	$32,151,840	$14,147,710*	47,083,450

(a) Includes Corrigan-McKinney after Sept. 25.
† Includes fourth quarter profits of Joseph T. Ryerson & Son Inc.
‡Includes fourth quarter profits of Joseph T. Ryerson & Son, but does not include profits for the first nine months of 1935 amounting to $691,692.

NRA Study Hits Steel Labor Policy; Sees Prices Rising

ONE of the functions of the skeleton organization of NRA surviving the Supreme Court knockout decision of May 27, 1935, is a study of certain "key" industries, of which steel is one. Last week the preliminary report of the steel study became available.

In this report it is stated that significant changes are taking place in the steel industry which will affect equipment, the character of the product, and labor requirements. Larger blast furnace capacity, new continuous rolling mills and the increasing production of new alloy steels are cases in point.

It is also pointed out in this preliminary report, which will undoubtedly be considerably revised before it is made public—if it ever is—that the classification and utilization of scrap in relation to future demand for iron ore, fuel economies as related to the growth of by-product coke production, shifts in demand as between railroads and motor vehicles, all are factors which may affect industry location, the character of the product, and the position of producing companies.

It is understood on good authority that the present intention of NRA officials is to complete the steel study—one of the few which probably will be completed. Whether it will ever see the light of day remains as a mere conjecture, as nothing definite has yet been decided on this point. At any rate, a preliminary report has been made to NRA officials.

Attacks Large Units

This preliminary report points out that the iron and steel industry is characterized by the dominant position of a number of large integrated companies.

"The United States Steel Corp.," the report states, "as the largest unit, has frequently acted as a price leader. A growth in the relative position of other large companies is indicated by a review of the history of mergers and consolidations, company interrelations and the analysis of financial trends."

The report follows:

The price pattern of the industry is dominated by large scale production units. Similar organization in other industries creates similar problems. Competition between large units tends to produce one of two extremes, either disastrous price wars or price agreements or leadership. In considering pricing methods it is essential to consider whether they are a natural result of such an industry pattern or a contributing cause to it.

The long term trend of prices has been downward since 1920. For the majority of products, monthly price variations are common. The degree of variation is necessarily limited for standard products in which raw material, transportation and high overhead charges are large cost elements. Under any pricing system there would be a trend toward stabilization and uniformity of prices. Uneconomic location and excessive cross hauling may be as much characteristic of unlimited free competition as of an artificial basing point system of pricing.

The outstanding factors in labor relations were the opposition of the members of the industry to the spread of industry unions, the reluctance to accept minimum wage rates which corresponded to current practice, and the desire to avoid acceptance of specific hour limitations. In spite of this attitude, however, the very material gain in earnings and employment under the code was an important achievement.

Employer-Employe Relations

A review of the history of employer-employe relations reveals that practically all of the major conflicts—notably the "Homestead strike" in 1892 and the general strike of 1919—were the result of employer antagonism to labor organizations, and their refusal to recognize or deal with employe-chosen representatives. It is apparent that the nonrecognition policy of the United States Steel Corp., as applied to its own subsidiary companies, has influenced the policies of independent companies as well.

Between the passage of the recovery act and the adoption of the code practically all of the larger units of the industry established company unions or employe representation plans, or as they were called in some cases employe representatives. An analysis of these various plans and devices shows that they are in no sense designed to accomplish bona fide collective bargaining between employer and employes, but rather that they have been used as a means of avoiding or combating the development of employe unions.

During the World war the wages and income of the steel workers rose materially. Following the general strike of 1919 the United States Steel Corp. put into effect a 10 per cent increase in the wages of common labor, and made some corresponding adjustments in skilled rates. Some of the independents followed this lead with increases.

Just subsequent to the passage of the national industrial recovery act and prior to the adoption of the code there was put into effect generally in the industry an increase of approximately 15 per cent; and further increases were made during the code period.

Generally speaking, however, throughout the history of the industry, while rates for the higher skilled occupations have been fairly in line with those paid to comparable labor in other industries, the wage rates for semi-skilled and unskilled labor particularly the latter, have been low.

The reduced rate of production during the code period furnished no real test of the effectiveness of the provisions limiting hours of work. It is not yet apparent how far the hour provisions under the code will result in any permanent change.

Reasonably adequate statistics submitted by the industry through September, 1935, indicate that the wage and hour standards set up in the code period have been generally maintained.

New quarterly prices had been filed just before the suspension of the code at the end of May, 1935 and apparently continued to be observed during the quarter ending with September. No new prices were filed thereafter; but price announcements indicate a substantial general upward trend during the last quarter of 1935, with probable further increases early in 1936.

The secretary of the American Iron and Steel institute was recently quoted by the Associated Press as saying that steelmakers felt recovery "would be hampered rather than helped by any further legislation designed to regiment business enterprise." This attitude apparently reflects the industry's opposition to labor agreements, particularly when no definite program of compensating trade practices seems feasible.

Labor

A WEEK ago last Saturday night, a group of steel mill employes in the Pittsburgh district gathered for a secret meeting in the Fort Pitt hotel. Most of their number were Carnegie-Illinois Steel Corp. employes, and behind closed doors they are reported to have taken steps based on attempting to change the existing employe-representation plan of the company.

John J. Mullen, one of the representatives, appeared to be chief fomenter, and said afterward: "The existing employe representation plan is absolutely ineffective. At the meeting Jan. 25, sentiment as expressed by all those present was to to this effect."

However, Mr. Mullen has not been a Carnegie-Illinois employe for some time and is now holding a minor political job in Pittsburgh. Since the meeting, employe representation councils at Homestead and other Carnegie-Illinois divisions have gone on record as opposing the sweeping statements of Mr. Mullen that at his meeting representatives of 26,000 workers were present.

Observers saw in this meeting a hint of the recent movement for a national steel labor union which would embrace all producers' plants and supplant existing company unions.

At its meeting in Miami, Fla., last week the A. F. of L. authorized President William Green to map plans and estimate the cost of organizing steel workers. In Washington, the United Mine Workers authorized President John Lewis to secede from the federation if necessary in his plan to organize labor vertically in the steel and other mass production industries.

The New Deal: Its Birthplace
(Caption by Mr. Stetson)

Puts Principle Above Profit

The New Deal: Its Sarcophagus
(Caption by Mr. Stetson)

WHEN a business man refuses to bid on a government project because he believes the project is "economically unsound"—that's news.

When that same business man accepts the contract, for which he refused to bid, because his product was specified, and he had to do it or else put an innocent party "in the hole"—that's more news.

When he uses the profit which comes to him from the job to publish a pamphlet setting forth his views regarding the project, and, to be fair, also the government engineer's—that, in stage parlance, is a "wow."

George W. Stetson, head of the Stets Co., Boston, sells Stets boiler feed controllers and Stets alarm water columns. The war department, United States engineer's office, Eastport, Me., asked Mr. Stetson for information on feed water regulators for three 700-horsepower oil fired boilers for the central heating plant at Quoddy village, Me. This, as the reader knows, is the famous tidewater power project. Mr. Stetson replied:

"I feel that the taxpayers' money which will be spent on this Quoddy bay project, not only for its construction but also for its subsequent operation, will, as a business proposition, be entirely wasted, for it will never return a profit on the investment, if the construction costs are honestly figured, and operating costs are honestly kept."

Then Mr. Stetson proceeded to call the engineer's attention to some figures on which he based his conclusion that the project is economically unsound.

"We would be only too glad to supply information and prices for equipment for any legitimate activity of the war department," his letter concluded. "We feel that the legitimate function of the war department is the protection of the country, and not the building of projects which (1) are economically unsound, (2) waste the citizens' money, (3) compete with a private industry which is already well regulated and profitable to the investor and consumer alike, and (4) in the process break down the faith and confidence of the citizens in the government.

"As I feel the Quoddy project is wrong in principle I must pass up any opportunity to profit from it, even though I will have to pay for the wild oats which Uncle Sam is sowing."

Army Engineer's Reply

Well, the war department, through Donald J. Leahey, captain, corps of engineers, administrative officer, at Eastport, wrote a long reply to Mr. Stetson. On the question of costs and the like, Captain Leahey stated:

"It is apparent that you do not have anything like a complete and proper understanding of the capacities or costs involved, and it is apparent that you are unsympathetic with the principle of the development."

He took him sharply to account for his statement "if the job is honestly figured," saying that the costs are and always will be a matter of public information. Then he pointed out that of the "2400 odd employes working here at present approximately 1700 persons have been taken off the relief rolls." Further:

"These individuals are paid only the security scales established by the President, which for this job vary from $44 a month for common labor to $63 a month for skilled labor. At these rates of pay these workers obviously have not been drawn from private employers. . . . . ."

Mr. Stetson promptly came back with:

"You question the accuracy of my figures on the capacity and cost involved. For my figures on capacity refer to *Mechanical Engineering* for September, 1935, the information for that article being obtained from Capt. Hugh J. Casey, United States engineer's office, Eastport, Me. For my figures on costs, D. S. Cooper's estimate was $1000 per k.w.

"Within the last ten days Col. G. R. Lukesh, of the United States army, division engineer, New York, stated publicly 'it will cost $50,000,000 to build the Quoddy tidal plant, and nobody knows yet where or how to get a market for its power.' That is $1250 per kilowatt or ten times the cost of an economically sound hydro plant which could compete with steam power. . . . . .

"You say the Quoddy project has taken 2400 people off the dole and put them on relief work. Is it better to give them the exercise incidental to burying millions of material in Quoddy bay than to give them enough for food, and avoid the destruction of good material? When you refer to this dam

as an 'actual job' and say that the workers are rendering 'constructive service,' you are just using words. What sort of a job is one that does not pay? How constructive is work that is wasted?

"These federal projects which compete with private industry for 'bulldozing' or 'vote getting' purposes destroy the confidence of investors and business men, and thereby retard normal business expansion. . . . . Eventuly your 'project' will go through a 'reorganization.' It probably will be sold to some efficient private management for what it can earn—not what it cost the taxpayers to construct it."

STEEL directed some inquiries to Mr. Stetson. He replied:

"We received the order for the feed water regulators for the Quoddy heating plant in spite of our past, present, and future protest that this job seems to be an absolute waste of the taxpayers' money in building a plant. The engineer had specified Stets regulators. The contractor had to install them. Had we refused to furnish them we would have put an innocent party in the hole. So we accepted the order from a dealer, and spent the profit in having printed and distributed 5000 copies of the attached bulletin to prominent mechanical and operating engineers. That may have been returning evil for good, but everything is fair in war and present day politics."

Lauded for Effort

The bulletin contained comments from those to whom Mr. Stetson had sent copies of his correspondence. They abound with such commendations of his action as "Admirable," "Good, hard common sense." One commentator referred to the "Shoddy project—shoddy for the taxpayers." "We agree with you," wrote another correspondent, ". . . . . yet the company is publicly owned and in the best interests of the stockholders you can appreciate that we must go after any and all prospective business."

STEEL asked Mr. Stetson for his photograph. He had none; no photograph of himself in 20 years. But, being something of a photographer, Mr. Stetson had while in Washington taken photographs of the capital and the Supreme Court's new building, which he sent in, with the captions: Birthplace of the New Deal—for the capital; and Sarcophagus of the New Deal—for the Supreme Court building.

Armco Not To Build

American Rolling Mill Co., Middletown, O., denies a recent newspaper report that it contemplates building a complete steel plant at Trenton, Mich., just south of Detroit. At times the company has had an option on a tract near there but has never built, and now spikes the latest rumor.

Production

STEELMAKING held unchanged at 50 per cent last week, off sharply from the 54½ per cent level reported in the comparable week of 1935, but considerably higher than the 36 per cent registered in the same week of 1934. Increased production in the Wheeling, Buffalo and Pittsburgh districts proved an offset to the slight declines noted at Cleveland, Chicago and Youngstown. Other districts were stationary. Further details follow:

Youngstown—Down 1 point to 60 per cent last week, and valley mills are expected to start this week at the same level.

Steelmaking Operations

Percentage of Open-Hearth Ingot Capacity Engaged in Leading Districts

	Week ended Feb. 1	Change	Same week 1935	Same week 1934
Pittsburgh	39	+ 1½	44	19
Chicago	52	— 1	66	31
Eastern Pa.	36½	None	30	25½
Youngstown	60	— 1	64	41
Wheeling	78	+ 8	95	64
Cleveland	59	— 8	78	69
Buffalo	32	+ 2	45	34
Birmingham	51	None	32	52
New England	83	None	52	82
Detroit	88	None	100	79
Cincinnati	75	None	†	†
Average	50	None	54½	36

†Not reported.

Chicago—Declined 1 point last week to 52 per cent. Some semifinished steel is being stocked in anticipation of improved finishing mill requirements later in the quarter. A pickup in the ingot rate is looked for late this month. Blast furnace operations have been reduced through the banking of one stack to 19 active units out of 41.

Pittsburgh—Advanced 1½ points to 39 per cent last week. The leading interest operated at 36 per cent, and the leading independent at 46 per cent. Many of the plant department shutdowns for lack of gas or because of difficult working conditions owing to extremely cold weather over the past two weeks, have again been reopened.

Twenty-eight furnaces out of 60 were active last week. Carnegie-Illinois Steel Corp. scheduled 12 of 32; Jones & Laughlin Steel Corp., 7 of 11; National Tube Co., 2 of 4 at McKeesport; Bethlehem Steel Co., 4 of 7 at Johnstown, Pa., and Pittsburgh Steel Co., Pittsburgh Crucible Steel Co., and American Steel & Wire Co., each 1 of 2.

Wheeling—Up 8 points to 78 per cent, with 29 out of 37 open-hearth furnaces melting, as against 26 the week preceding.

New England—Unchanged last week at 83 per cent, with indications this rate will be maintained this week.

Detroit—Continued at 88 per cent last week, with 15 of the district's 17 open hearths active.

Central eastern seaboard—Unchanged at 36½ per cent last week, and this rate is expected to be at least sustained over the current week. To date, production in this quarter has not expanded as much as the trade anticipated earlier in the year.

Cleveland-Lorain—Off 8 to 59 per cent, Republic Steel Corp. continuing with 6 of its 14 open hearths, Otis Steel Co. with 5 of 8 and National Tube Co. all 12 units.

Buffalo—Increased 2 points last week to 32 per cent, with 12 open hearths melting. This rate will be maintained this week.

Birmingham—Held at 51 per cent last week, with a 63 per cent level indicated for this week.

Cincinnati—Remained at 75 per cent last week, 18 of 24 open hearths being operated. Backlogs of mills provide fair assurance of retention of this rate.

Lacher To Edit Employe Paper for U.S. Steel

Gilbert L. Lacher has resigned as managing editor of *The Iron Age* to become associated with the United States Steel Corp. as editor of *United States Steel News*, to be published by the Corporation. The change is effective Feb. 1. The new publication will be devoted to news of affairs of the Corporation and to items which may be of general interest to its employes. The first issue will appear in April, and will have an initial circulation of 250,000 copies. While the circulation will be devoted principally to Corporation employes, some provision will be made for distribution to others expressing interest in the publication.

Mr. Lacher has been associated with *The Iron Age* for many years. He was its editorial representative in Chicago prior to going to New York 11 years ago.

Buy Can Companies

Continental Can Co. has acquired the can making facilities of Armour & Co. and will supply Armour's requirements for containers.

It was reported last week that American Can Co. was taking over the can making facilities of Libby, McNeill & Libby, on the same basis.

Ten days ago the Owens-Illinois Glass Co., Toledo, O., purchased the Enterprise Can Co., Pittsburgh, and the Tin Decorating Co., Baltimore.

Scrap Use Gaining, at Last To Be Accurately Surveyed

BY RICHARD J. LUND
Bureau of Mines, Washington

DURING the past few years the total production of secondary copper, including that from both "old" and "new" scrap and that recovered in alloys, has considerably outdistanced smelter production of primary copper from domestic ores.

Total production of secondary lead during the past five years has been almost double the mine production of recoverable lead in our greatest lead-producing state, Missouri. Production of aluminum from scrap finally passed that of primary metal in 1934. Secondary antimony produced during the past three years has been about one and one-half times our imports, there being little production from domestic ores.

These facts have taught a lesson, and industry has emerged from an early attitude of indifference to the importance of accurately appraising secondary supplies as market factors into one of keen interest in the measurement of supplies and market movements both of scrap and of secondary metals derived from it. Clearly, scrap metal is destined to perform a very important function in the future in keeping the wheels of industry turning.

Ferrous Scrap Vital Factor

While the composite tonnage of scrap going into the production of secondary copper, lead, zinc, tin, aluminum, antimony and nickel is very large indeed, it is of the order of magnitude of only a few per cent of the millions of tons of ferrous scrap which annually are consumed in the production of iron and steel. The vital importance of this ferrous scrap to our great iron and steel industry is generally recognized.

According to estimates by C. H. Strand, Washington, total domestic consumption of scrap iron and steel during the decade 1925-1934 inclusive was some 256,000,000 gross tons, of which about 193,000,000 tons was consumed in steel manufacture.

Our iron ore production during the same period amounted to 399,000,000 gross tons, with an average iron content of about 50 per cent, or roughly 200,000,000 tons. For rough comparison the exceedingly minor proportion of nonferrous content of scrap consumed is neglected.

The iron content of total scrap consumed during the period, therefore, was about 128 per cent of the iron content of ore produced, while the proportion of scrap used in steel manufacture almost equaled the iron content of the total ore production.

Richard J. Lund

These estimates on scrap consumption include sizable quantities of "home" or "plant" scrap, which might roughly be estimated at about 50 per cent of the total. Purchased scrap consumed during the years 1925-34 would in all probability be well over 100,000,000 tons, or better than 50 per cent of the iron content of our iron ore output.

Since the average annual ore production during this decade was 40,000,000 tons, having an iron content of 20,000,000 tons, the use of purchased scrap has extended the life of our iron ore reserves five years during the ten years under review. The time when our high-grade lake ores will have been largely depleted, therefore, has been considerably extended by the use of scrap in the manufacture of iron and steel.

Furthermore, such postponement of the time when certain ore bodies will be drawn upon has a marked effect in tending to decrease the present value of the ore already blocked out in the ground. Comprehensive valuation studies on ore reserves for tax purposes therefore must include careful consideration of the past and probable future consumption of scrap metal in relation to the total demand for such metal. Only in this way can a reasonable estimate be made of the amount of ore which will have to be drawn upon over a given period of years.

It has been pointed out frequently that production of minerals is a one-crop proposition. Nature has been busy over millions of years to give us the limited quantity of minerals sufficiently concentrated for commercial development and near enough to the surface to be found and mined profitably.

Although geologic processes will continue to replenish these reserves near the surface in the future, such replenishment may not occur and be made available to whatever form of life may then inhabit the earth for some tens or hundreds of millions of years.

It is important, therefore, to treat present commercial deposits with care and derive the maximum benefit from their development and use. This is what is meant by conservation.

Receiving Recognition

The thought that metals produced from scrap, or its somewhat cruder synonym "junk," were inferior to primary or virgin metal has largely disappeared, due in the main to the tremendous strides made by the scrap industry along the lines of properly preparing, classifying and sorting the scrap and to the great advances made by metallurgists in the technique of reshaping, remelting, resmelting, or refining it.

Even so, "the memory lingers on," as strikingly evidenced by the bill introduced in the senate of California last year to prohibit the use of scrap iron or any other scrap in any material used in the construction or repair of any public buildings, bridges, or other structures in that state. It is to be regretted that such misconceptions regarding quality still persist.

The scrap industry, which has been built around the collection, preparation and marketing of these scrap metals, has developed rapidly into a powerful trade employing some 200,000 workers, doing an annual business probably running well over $200,000,000, and finally commanding and receiving the recognition and respect of all legitimate business which you justly deserve.

The admirable work of Benjamin Schwartz, director general of the Institute of Scrap Iron and Steel, in sponsoring and effectuating the policies advocated by the institute is in

Abstract of address to eighth annual convention of Institute of Scrap Iron and Steel, Chicago, Jan. 21-23.

no small measure responsible for this enhanced degree of recognition and respect. He is to be highly complimented for his constant devotion to the difficult problems confronting the industry, especially during the trying period of the past few years. This good work, in turn, has been possible only because the institute provided the vehicle for real co-operation.

In spite of its vital importance as an industrial raw material, the actual statistical record of consumption of ferrous scrap is meager and faltering. The bureau of the census covered this item in its 1929 canvass, and the research bureau of the scrap institute conducted a similar survey of scrap consumption the same year. This is the only year for which reasonably reliable figures are available.

Quarterly and annual statistics of revenue shipments of scrap iron and scrap steel by Class I steam railroads give us some indication of scrap consumption. However, unknown additional quantities going into consumption tend to distort the picture and prevent use of these carefully compiled figures as an accurate gage of total ferrous scrap consumption. Outstanding among these indeterminables are the quantities of nonrevenue scrap produced and shipped by the railroads direct to the consumers, and the amounts of scrap shipped solely by water.

Determining Consumption

Another means, used repeatedly in the past, of arriving at a rough approximation of ferrous scrap consumption might be termed the method of subtraction. By this method the amount of steelmaking pig iron produced is subtracted from the production of steel ingots, with corrections made for average iron content of each, loss in slag, etc. Figures obtained in this way cover mainly the scrap consumed in open-hearth furnaces, and include the purely "home" or "plant" scrap as well as that purchased. More calculations can be made to obtain rough estimates of scrap consumed in blast furnaces, foundries, rail rerolling mills, and other miscellaneous uses; but all these methods are based on assumptions concerning average plant practices which are conjectural to say the least.

Recognizing the vital need for annual statistics of ferrous scrap consumption the bureau of mines has been persuaded to make such an annual canvass beginning this year. The bottle neck in the flow of ferrous scrap is undoubtedly at the door of the consumer. For this reason we are starting out by canvassing only the steel mills, blast furnaces, bar rolling mills, and foundries.

The initial inquiry will be as simple as possible, requesting only the total consumption of scrap iron and steel, broken down to show how much consisted of "home" or "plant" scrap, and how much was purchased, including under the latter category that returned under exchange contracts or conversion agreements, and also that transferred from other plants under the same control.

A further breakdown is intended to show the quantity of "home" and purchased scrap, and how much pig iron was consumed by different types of equipment, such as blast furnaces, open-hearth furnaces, bessemer converters, electric furnaces, cupolas, and air furnaces. Only totals will be published, and the confidence of individual returns will be respected.

Sources of Ferrous Scrap

Outstanding among the unknowns of ferrous scrap consumption is the ratio between the amount of "new" scrap and the amount of "old" scrap consumed. The term "new" scrap refers to material such as runners, skulls, risers, croppings, clippings, mill scale, flashings, turnings, etc., which is discarded during the smelting of metal and during the manufacture of fabricated products from it. Material of this nature really comprises only a normal increment in the working stock of metal which the manufacturer requires.

The term "old" scrap refers, in turn, to metal products which have already gone through a cycle of use and been discarded because of wear or obsolescence. No doubt the great preponderance of "home" scrap consumed by a large steel plant, let us say, consists of new material, although there is unquestionably a lot of worn out equipment in the plant which from time to time is utilized as part of the charge in its furnaces.

Purchased scrap consists of huge tonnages of both new and old material—just what the ratio is we do not know and may never know. The significance attaching to this phase of the problem, however, is sufficient to urge a concerted attack in clarifying it.

Somewhat allied to the consideration of "old" and "new" scrap is the matter of industrial source of the ferrous scrap consumed. In other words, roughly what proportion comes from railroads, from automobile manufacturing and wrecking, from shipbreaking, from structural wrecking, from machinery manufacturing, from miscellaneous metal goods manufacturing, and from the home and farm? Rough estimates of proportions of consumption produced by certain industries have been made in the past.

Until recently, apparently the railroads were far out in front as producers of scrap iron and steel, in which case undoubtedly the great preponderance could be classified as old material. In the last few years, however, it appears that the automobile industry has displaced the railroads as the most important supplier of ferrous scrap, a large proportion of which is lighter, new material.

Increasing relative importance of light rolled steel such as sheet and strip in comparison with heavier products, as well as the tendency to use greater proportions of special alloy steels seemingly already is tending to bring about somewhat of a scarcity of heavy-melting in the market. In the future this situation will no doubt be aggravated rather than mitigated if this trend continues, and will probably necessitate certain changes in technique of preparing and utilizing the increasing proportions of this class of material.

Even though the present survey does not include canvassing dealers for information, the results will doubtless be of value to your trade as well as to other groups interested in various aspects of ferrous scrap.

If the trade strongly requests that additional details be built around the skeletonized and fundamental data sought this year, such as estimates of the amount of old and new scrap going through the market, industrial source of the scrap, its geographic flow, a simple classification into commercial grades, or figures throwing light on the direct dealing question, the bureau will give serious consideration to the matter of expanding the survey to include those details in greatest demand.

The planning committee on mineral policy, in the report of the national resources board of December, 1934, summed up discussion on scrap metals by the very succinct statement: "The subject of scrap is the great blind spot of the world's metal economy."

Williams Followed By Henry Roemer

HOMER D. WILLIAMS concluded a 56-year affiliation with the iron and steel industry last Saturday when he formally relinquished the presidency of the Pittsburgh Steel Co.

Henry A. Roemer, previously elected, succeeded Mr. Williams as president of Pittsburgh Steel, and has moved his offices from Sharon, Pa., to Pittsburgh. Mr. Roemer, also head of the Sharon Steel Hoop Co., was chosen after Sharon purchased a substantial stock interest in Pittsburgh Steel.

When stockholders of Sharon Steel Hoop meet Feb. 27 to change the name to the Sharon Steel Co. there may be further developments leading to the integration of these two companies and also some other corporations in which the Hillman interest is strong, of which the A. M. Byers Co. and Spang, Chalfant & Co. are two.

January Iron Output Is Down 4 Per Cent; 1 Furnace Out

COKE pig iron production in the United States in January, with a total of 2,028,791 gross tons and an average daily rate of 65,445 tons, was a loss of 4.1 per cent from the December output. At the same time, active blast furnaces dropped from 120 on Dec. 31 to 119 on Jan. 31. In spite of this recession, production and operating furnaces made the best showing for a new year's first month since 1930.

According to reports from furnace operators, involving estimates for the last one or two days of the month, the total output was a loss of 86,705 tons from the 2,115,496 tons made in December. It is necessary to go back to January, 1930, with 2,838,751 tons, to find a better January figure. Production in January, 1935, was 1,478,443 tons.

MONTHLY IRON PRODUCTION

Gross Tons

	1936	1935	1934
Jan.	2,028,791	1 478.443	1,225 643
Feb.		1,614,905	1 270 792
Mar.		1,770 990	1,625.588
Apr.		1,671,556	1.736.217
May		1,735,577	2,057.471
June		1,558 463	1.936.897
July		1,520 340	1.228,544
Aug.		1,759,782	1,060,187
Sept.		1,770.259	899,075
Oct.		1 978.379	951.353
Nov.		2,066,293	957,906
Dec.		2,115,496	1,028,006
Total		21,040,483	15,977 679

Average daily production has now shrunk for two consecutive months. The drop from December's rate of 68,242 tons was 2797 tons per day. January's daily rate stands as the best January since 1930 with 91,573 tons; the rate of January, a year ago, was 47,692 tons.

The total of 119 stacks on the last day of January was the highest for any January since 1930 with a total of 173. One year ago, the total was 89.

During the month, 4 steelworks or nonmerchant stacks resumed operations, while 3 were blown out or banked. Two merchant stacks blew out and none resumed.

Blast furnaces resuming in January were: In Pennsylvania: Cambria E, Bethlehem Steel Co.; Monongahela No. 4, National Tube Co.; one Aliquippa, Jones & Laughlin Steel Corp. In Alabama: Ensley No. 1, Tennessee Coal, Iron & Railroad Co.

Stacks blowing out or banking were: In Ohio: River No. 3, Republic Steel Corp. In Pennsylvania: Shenango No. 1, Shenango Furnace Co.; Edgar Thomson H, Carnegie-Illinois Steel Corp. In Alabama: Woodward No. 3, Woodward Iron Co. In Indiana: Gary No. 8, Carnegie-Illinois Steel Corp.

AVERAGE DAILY PRODUCTION

Gross Tons

	1936	1935	1934	1933
Jan.	65,445	47,692	39,537	18,348
Feb.		57,675	45,385	19,752
Mar.		57,120	52,438	17,484
Apr.		55,719	57,873	20,786
May		55,986	66,370	28,784
June		51,949	64,563	42,165
July		49,043	39,630	58,108
Aug.		56,767	34 199	59,137
Sept.		59,009	29,969	50,264
Oct.		63,818	30 689	43,824
Nov.		68,876	31,930	36,124
Dec.		68,242	33,161	38,456
Ave.		57,694	43,774	36,223

Jones & Laughlin Steel Corp. has again entered the production of ferromanganese, having blown in a fourth blast furnace at Aliquippa, Pa., formerly on bank, the output of which is now ferromanganese. The furnace resumed Jan. 27. About a year ago, Jones & Laughlin worked up a quantity of manganese ore on hand. The company is using its own output.

The Adrian blast furnace of the Adrian Furnace Co., DuBois, Pa., has been sold to H. E. Salzberg Co. Inc., New York, for dismantling and demolition is now under way. This furnace, built in 1902-3, and last operated in 1930, had an annual capacity of 85,000 tons of foundry pig iron. With the dismantling of this unit, the total number of potential furnaces in the country is reduced from 268 to 267.

JANUARY IRON PRODUCTION

	No. in blast last day of Jan.	Dec.	Total tonnage Merchant	Nonmerchant
Ohio	28	29	67,109	425,514
Penna.	36	35	68,704*	488,531*
Alabama	12	12	88,413*	65,946*
Illinois	10	10	50,947	153,438
New York	8	8	52,986	85,474
Colorado	1	1		
Indiana	9	10	12,920*	295,980
Maryland	4	4		
Virginia	1	1		
Kentucky	1	1		
Mass.	0	0		
Tenn.	0	0		
Utah	1	1		172,829
West Va.	3	3		
Michigan	4	4		
Minnesota	1	1		
Missouri	0	0		
Total	119	120	341,079*	1,687,712*

*Includes ferro and spiegeleisen.

Activities of Steel Users and Makers

EASTERN MALLEABLE IRON CO., Naugatuck, Conn., has taken over properties, including plant, equipment, and personnel of the Eberhard Mfg. Co., Cleveland. This plant will be operated as the Eberhard division of the Eastern Malleable Iron Co., with no change in personnel. The Eastern Malleable company, in addition to its Naugatuck division, also operates plants at New Britain, Conn., and Wilmington, Del.

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Hagan Corp., Pittsburgh, has appointed the Hendrie & Bolthoff Mfg. & Supply Co., Denver, as its representative for the handling of combustion control equipment, and as the representative of Hall Laboratories Inc. and the Buromin Co., subsidiaries of the Hagan Corp., in the field of boiler water conditioning. Other district offices are located in Birmingham, Ala., Boston, Buffalo, Toronto, Ont., Chicago, Cincinnati, Cleveland, Detroit, Houston, Tex., Kansas City, Mo., New York, Philadelphia, Pittsburgh, St. Louis, St. Paul, San Francisco, Seattle, and Charlotte, N. C.

RATE OF OPERATION

(Relation of Production to Capacity)

	1936[1]	1935[1]	1934[2]	1933[3]
Jan.	46.9	34.2	28.3	13.3
Feb.	....	41.4	32.5	14.3
Mar.	.....	41.0	37.5	12.7
Apr.	.....	40.0	41.4	15.1
May	.....	40.2	47.5	20.9
June	.....	37.2	46.3	30.6
July	.....	35.2	28.4	42.4
Aug.	.....	40.7	24.5	42.8
Sept.	.....	42.5	21.5	36.4
Oct.	.....	45.8	22.1	31.8
Nov.	.....	49.5	22.8	26.2
Dec.	.....	49.0	23.7	27.9

[1]Based on capacity of 50,845,741 gross tons, Dec. 31, 1934; [2]capacity of 50,975,561 tons, Dec. 31, 1933; [3]capacity of 50,313,975 tons, Dec. 31, 1932. Capacities by American Iron and Steel Institute.

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Canton Foundry & Machine Co. has moved its general offices from Canton, O., to its factory at 6400 Breakwater avenue, Cleveland. This was effective Feb. 1.

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William M. Bailey Co., Pittsburgh, recently booked an order for open-hearth checkers for the Steubenville, O., works of the Wheeling Steel Corp.

DETROIT

RECENT weather may have been manna to coal, oil, and gas sellers, but it was just another headache to automotive sales departments. Buyer interest in new cars naturally bogged down in most sections of the country under the weight of snow and sub-zero temperatures and cast a further shadow over the immediate manufacturing outlook.

At the worst, though, the cloud is only temporary despite the discouraging comment of the weather bureau that a severe January invariably is followed by a February of similar intensity.

Reflecting that "if winter comes, etc.," manufacturers still feel that their early introduction of new models has been successful. Retail sales to date have shown encouraging gains over the volume a year ago regardless of the efforts of the weather man, and the industry will be primed to meet promptly the anticipated spring upturn in registrations.

With dealers now adequately supplied, manufacturers continue to trim their production to coincide with retail conditions. Chevrolet recently cut one day from its weekly schedule, and Ford dropped from 6000 to around 5000 jobs daily but holds to five days a week. Hudson is down to three days.

This Month Low Point

Chrysler, while slowing down the assembly lines, is understood to be planning relatively heavy production of parts and is seeking extra space for storage between now and spring in anticipation of heavier needs at the latter time.

The industry thinks that February will develop the low in production for the first half. January output was about 360,000 units. A further drop to 300,000 would not be surprising this month. This would compare with 335,667 a year ago, but at that time dealers' stocks still were being accumulated and the influence of the newness of 1935 models on retail sales had not been dissipated as much as it has today.

March is tabbed for recovery, though the probable extent is rather uncertain at the moment.

Dealers last week jotted down in their lists of sales prospects the names of several million war veterans. While the bonus bonds cannot be cashed before June 15, their influence on automobile buying likely will be felt before then since moderate payments can be arranged for a short time prior to the receipt of the funds.

Never before has the industry made it so apparently painless for the public to purchase automobiles. Ford has advertised widely its $25 monthly payment, and other manufacturers have followed suit. One financing company now is offering to make this rate available for the buying of any car. Interest rates on unpaid balances also are substantially lower than those in effect years ago, when installment buying first was in its heyday.

Releases Veering Upward

Steel sellers derived some cheer last week from the fact that the previous downward tendency in automotive releases had appeared to level off. February schedules are not sufficiently complete to give an exact picture of what may be expected of steel shipments this month, but the trade looks for the start of an upward movement late in the period.

Significant in its indication of probable activity in March assemblies is an increase in February castings requirements for some interests, including Ford. Since castings orders appear as much as 30 days ahead of final assemblies, an increase in foundry output this month would be necessary to support a pickup in March production of finished cars.

Detroit sales offices of steel companies have had much less grief this year than last in serving auto plants during the initial rush of production of new models. The earlier introduction has provided a longer period to meet the spring sales peak, and mills were better prepared to accommodate the year-end bulge in demand than they were a year ago. No unusual pressure on finished steel prices is reported, actual concessions from previously existing levels having been confined to flat-rolled material.

Speaking of the weather, members of the American Society of Heating and Ventilating Engineers in convention at Chicago last week discussed what to do about it so far as its influence on the occupants of motor vehicles is concerned. They opined that cooling equipment will be adopted for buses first—some now being equipped. Passenger cars will be so equipped later.

For bus use they pictured a gas compressor, not much larger than the unit of a household refrigerator, located under the hood and driven by the bus motor. The refrigerant would be piped to a compartment above the driver. From there fans would circulate the chilled air through ducts near the top and along the sides of the vehicle.

Automotive engineers regard air cooling or conditioning of cars as an inevitable development, though it is regarded as likely to fall under the classification of accessories rather than standard equipment. Sales departments still like to attach low f.o.b. price tags to cars, regardless of how much must be added before the full delivered figure is reached.

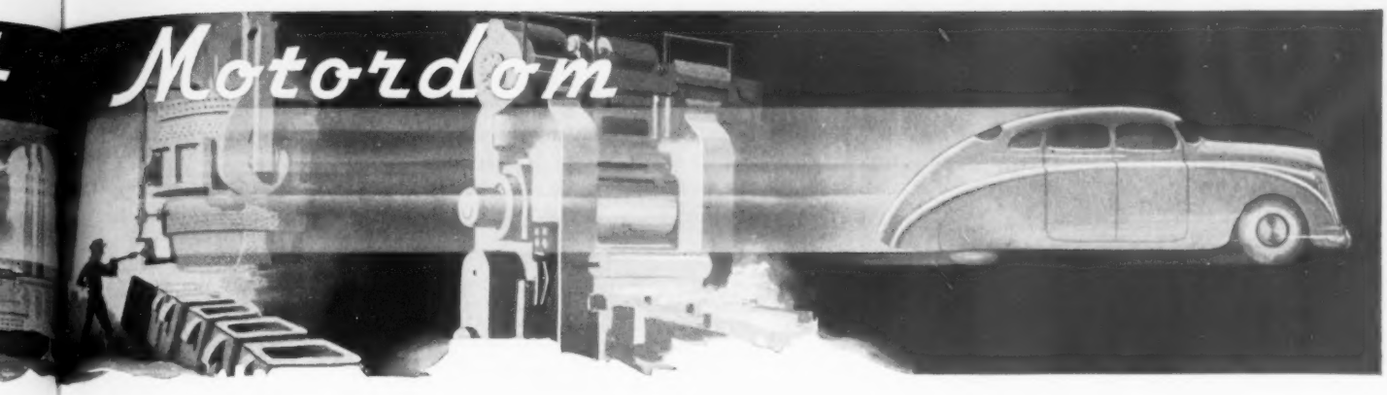
Still a Luxury Item

When the old-fashioned system of classing necessary equipment as bumpers and spare tire as extras still is adhered to, luxury items, such as radios, heaters or cooling systems, appear far removed from the status of standard appliances.

Further attention likely will be given to the improvement of motor car ventilation, but it is doubted that air-conditioning is ready to be adopted on the 1937 models which now are in the course of design.

General Motors will derive additional experience in the development of air-conditioning equipment through its new Delco-Frigidaire Conditioning Corp. which has been formed to supplement the Frigidaire and Delco manufacturing divisions.

Very little work for next year's cars has reached die shops so far.



Auburn has placed some business, apparently intending to follow its plan of last year in presenting new models somewhat prior to the more general introduction of October and November.

Designs of most other interests are well along, and about Feb. 15 is expected to see the start of better activity in tool and die work. General Motors hopes to occupy its new Grand Rapids diemaking and stamping plant early in May.

Die orders have failed to appear from Packard for the smaller six it had under consideration. In fact, the word now is that Packard has discarded the idea of building such a car and will concentrate on the 120 and higher-price lines. This interest is moving counter to the general operating trend, holding to steady schedules five days a week and is expected to boost its production from the January total of around 5400 units to 6000 in February.

General Motors' earnings last year, the best since 1929, increased faster than did its sales of automobiles. Profits rose 76.5 per cent, car sales 38 per cent. While not all of the leading interest's income is derived from automotive manufacturing, net income in 1935 represented $97 per unit sold. In 1934 the profit figured $76 per car and truck. Similarly, Chrysler's earnings last year are estimated around $40 per unit output, against $16.50 in 1934.

Three Dominate Market

These two companies plus Ford accounted for 3,665,841, or 87.8 per cent, of the 4,182,600 cars and trucks built in this country and Canada in 1935. The year before they made 84.1 per cent. This larger slice of the entire market was accounted for entirely by Ford. The latter boosted its share of all units sold by the industry from 25 per cent in 1934 to 30.5 per cent last year, while General Motors slipped from 39 per cent to 37.2 and Crysler showed practically no change at around 20 per cent for both years.

Independent companies as a whole fared rather poorly in comparison with the sharp upturn in earnings of the three leaders. The outstanding exception has been Packard, whose heavy investment in the 120 has has proved a highly successful move. Nash and Packard alone of the independents are in a solid financial position comparable with that of the dominant interests.

Whether the smaller producers can soon regain their once larger share of the automotive market is thought doubtful because of the heavy investment necessary for modern plant equipment to bring down costs sufficiently to compete successfully in the low-price field.

General Motors is adding a new touch to its sales promotional activities. The past several years shows have been held in key cities, with various forms of entertainment to help attract the public to the display of cars. Last week a two-mile motor caravan left Detroit for a 20,000-mile trek which will last a year. Its 28 vehicles house the General Motors Parade of Progress, a traveling exposition intended to demonstrate the advancements of science and industrial research. Like the old-time medicine show, it will stop principally in the smaller towns.

Keener competition in the commercial car market is indicated for this year. As previously reported, Mack and General Motors Truck have entered the ½-ton field. Reo will build the small trucks for the former, which in the past has concentrated on heavy-duty equipment. Hudson is offering six commercial models on the Terraplane chassis. More streamlining and improvements to cab interiors feature the 1936 trucks.

Drop Union Merger Plans

Plans to merge three independent automobile unions into a single industrial union to compete with the American Federation of Labor have been dropped. As a result, the Mechanics Educational Society of America has invited members of other independent unions to join its ranks. The Mechanics group would like to form a union which would be comprehensive in its coverage of fabricated metals industries, with automobile labor as one of its five main divisions.

The story current a short time ago that Japan soon would invade this country with its new $100 automobile appears to have been exaggerated. Similar to the small Austin in size and cost of operation, the Datsun car, built in Yokohama, sells for about $500, according to the company's production manager, who happens to be an American. At this figure the car can offer little competition in the United States.

Hupp remains closed pending negotiations for a loan which has been made necessary by the depletion of working capital and materials. . . . Motor Wheel Corp., Lansing, Mich., during 1935 produced the largest number of automobile wheels in its history. . . . Pontiac boasts that 84 per cent of all the cars it has built still are in operation. Pontiac's retail sales last year increased 101.8 per cent over 1934.

Automobile Production

Passenger Cars and Trucks—U. S. Only
By Department of Commerce

	1933	1934	1935
Jan.	128,825	155,666	232,785
Feb.	105,447	230,256	335,667
Mar.	115,272	338,434	429,793
Apr.	176,432	352,975	477,691
May	214,411	330,455	364,662
June	249,727	306,477	361,248
July	229,357	264,933	336,985
Aug.	232,855	234,811	239,994
Sept.	191,800	170,007	89,804
Oct.	134,683	131,991	275,024
Nov.	60,683	83,482	398,039
Dec.	80,565	153,624	407,804
Year	1,920,057	2,753,111	4,009,496

Estimated by *Cram's Reports*

Week ended:	
Jan. 4	65,840
Jan. 11	98,630
Jan. 18	95,170
Jan. 25	87,415
Feb. 1	85,790

1935 Steel Exports Postwar Record

DECEMBER export and import statistics for iron and steel, presented herewith, place the year's total of exports at 3,067,336 gross tons

FOREIGN TRADE OF UNITED STATES IN IRON AND STEEL

Gross Tons

	1935		1934	
	Imports	Exports	Imports	Exports
Jan.	22,784	262,740	22,653	178,023
Feb.	28,905	228,537	25,407	151,184
Mar.	21,409	323,035	38,393	261,269
April	28,866	205,336	26,862	201,539
May	47,719	286,598	29,465	241,753
June	33,208	289,687	24,848	219,406
July	31,894	296,802	17,676	233,186
Aug.	31,312	247,312	32,418	242,947
Sept.	53,158	244,419	23,847	301,330
Oct.	59,569	238,358	20,202	226,209
Nov.	56,637	205,242	35,272	299,263
Dec.	53,678	239,268	19,708	282,655
Total	469,954	3,067,336	316,761	2,832,764

—a new postwar record, eclipsing 1929 by 29,479 tons, and 1934 by 12 per cent. Over 1933, last year's exports were a gain of 129 per cent.

Scrap exports, at 2,107,814 tons, accounted for 69 per cent of last year's shipments. Sales of non-scrap items amounted to 959,522 tons, according to the metals and minerals division of the department of commerce, Washington, of which R. L. Harding is chief.

Last year's imports, aggregating 469,954 tons, were 48.4 per cent higher than in 1934. This higher import trade resulted from substantially increased purchases abroad of ferromanganese and spiegeleisen, structural shapes, hoops and bands, barbed wire, nails, tacks, staples and "other pipe."

Canada maintained first rank in the supply of iron and steel products to the United States, contributing 111,066 tons, against 78,662 tons in 1934. The major products shipped in were scrap, spiegeleisen and pig iron.

UNITED STATES IMPORTS OF IRON AND STEEL PRODUCTS

Gross Tons

Articles	Dec., 1935	Nov., 1935	Jan. thru Dec., 1935
Pig iron	16,289	15,550	130,937
Sponge iron	176	195	1,460
Ferromanganese and spiegeleisen (1)	4,186	8,153	54,007
Ferrochrome (2)	21	10	32
Ferrosilicon (3)	98	78	781
Other ferroalloys (4)	.....	.....	1
Scrap	10,970	15,392	64,733
Steel ingots, blooms, etc.	40	83	2,085
Concrete bars	362	166	3,108
Hollow bar, drill steel	83	88	1,172
Merchant steel bars	.....	.....	8,439
Bars, whether solid or hollow (6)	2,586	2,147	16,311
Iron slabs	.....	.....	.....
Iron bars	480	56	1,854
Wire rods	1,287	2,612	16,781
Boiler and other plate	140	54	681
Sheets, skelp, saw plate	1,052	541	11,054
Tin plate	6	8	188
*Structural shapes	4,414	3,828	40,397
Sheet piling	978	.....	1,203
Rails and fastenings	703	762	5,658
Cast iron pipe, fittings	.....	46	76
Malleable iron pipe, fittings, advanced	.....	.....	46
Welded pipe	511	396	4,764
Other pipe	1,712	431	15,822
Cotton ties (5)	.....	.....	8,136
Other hoops, bands	2,140	1,597	22,446
Barbed wire	2,192	1,486	21,912
Round iron, steel wire	337	253	3,924
Telegraph and telephone wire	.....	15	38
Flat wire, strip steel	192	204	1,888
Wire rope and strand	278	281	2,141
Other wire	145	120	1,360
Nails, tacks, staples	2,114	1,883	21,319
Bolts, nuts, rivets	22	35	296
Horse and mule shoes	38	43	590
Castings and forgings	126	124	1,314
Total, gross tons	53,678	56,637	469,954

(1) Manganese content. (2) Chrome content. (3) Silicon content. (4) Alloy content. (5) New class. No comparable figures for 1934 or previous years. (6) New classification as result of the reciprocal trade agreement with Belgium. No comparable figures for previous year.

UNITED STATES EXPORTS OF IRON AND STEEL PRODUCTS

Gross Tons

Articles	Dec., 1935	Nov., 1935	Jan. through Dec. 1935
Pig iron	1,066	352	4,107
Ferromanganese and spiegeleisen	.....	42	131
Iron and steel scrap	142,135	104,961	2,047,290
Tin plate scrap	2,673	3,165	38,597
Waste-waste tin plate	3,572	2,420	21,927
Ingots, blooms, etc.	732	2,246	39,782
Bars, iron	150	129	1,200
Bars, steel	3,478	3,798	52 289
Bars, alloy steel	174	425	2,816
Wire rods	2,943	1,796	26,090
Boiler plate	108	81	1,369
Other plate, not fab.	5,557	4,141	42,909
Skelp, iron or steel	3,290	15,642	64,421
Iron sheets, galv.	154	162	1,948
Steel sheets, galv.	7,791	5,855	73,063
Steel sheets, black	7,671	9,592	100,483
Iron sheets, black	94	412	5,186
Strip steel, cold-rolled	1,880	2,009	20,146
Strip steel, hot-rolled	1,521	2,261	24,509
Tin plate, taggers' tin	18,923	13,330	132 212
Terneplate	102	149	2,234
Tanks, exce't lined, etc.	2,025	1,584	8,704
Shapes, not fab.	4,079	4,089	36,656
Struct'l shapes, fab.	684	544	14,985
Plates, fabricated	36	351	1,611
Metal lath	99	50	851
Frames, sashes, and sheet piling	335	487	4,827
Rails, 50 lbs. and over	7,110	4,164	47,915
Rail, under 50 lbs.	10	835	3,756
Rail fastenings	883	456	5,819
Switches, frogs, crsgs.	233	66	1,437
Railroad spikes	162	291	2,478
Railroad bolts, nuts	76	52	559
Boiler tubes, seamless	492	492	8,002
Boiler tubes, welded	38	13	640
Casing and oil line pipe, seamless	1,310	616	18,912
Do, welded	358	57	4,808
Seamless black pipe, other than casing	189	141	2,725
Mal.-iron screwed pipe fittings	283	227	3,474
Cast-iron do	164	104	1,877
Cast-iron pressure pipe and fittings for	167	1,024	11 128
Cast-iron soil pipe, do	180	783	4,507
Weld'd black steel pipe	1,209	1,088	16,306
Welded black wrought iron pipe	55	110	2,004
Welded galv. steel pipe	1,349	979	16,639
Welded galv. wrought iron pipe	319	111	1,345
Riveted iron or steel pipe and fittings	35	76	478
Plain iron or steel wire	1,754	1 370	17,040
Galvanized wire	1,423	2,013	22,023
Barbed wire	3,205	2,768	31,963
Woven wire fencing	206	225	2,180
Woven wire screen cloth	103	60	1.041
Wire rope	259	480	4.039
Other wire mfrs.	1,117	508	5,937
Ordinary bolts, mach. screws, rivets, washers	481	503	6,370
Wire nails	1,055	1,100	11,136
Horseshoe nails	97	68	682
Tacks	16	44	406
Other nails, staples	183	180	2 619
Iron castings	675	966	9,161
Steel castings	132	251	2,682
Car wheels and axles	2,143	2,156	18,413
Horseshoes	37	9	199
Iron and steel forgings, n.e.s.	489	783	6,293
	239,269	205.242	3,067,336

Voight, Gibbons To Carnegie-Illinois

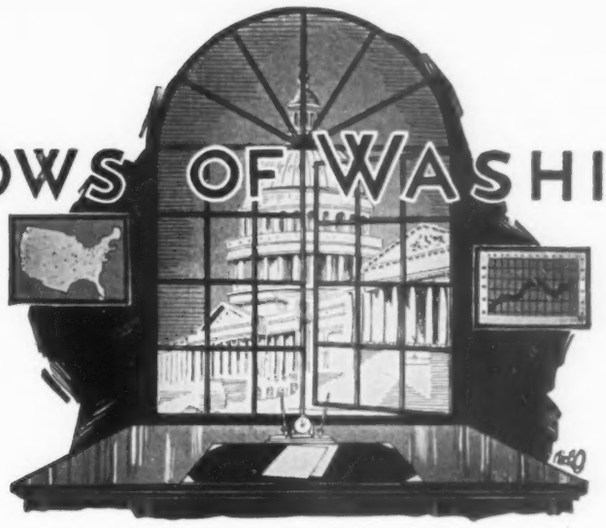
PAUL F. VOIGHT JR., formerly vice president of Allegheny Steel Co., Brackenridge, Pa., has been named manager of the newly-created stainless steel division of Carnegie-Illinois Steel Corp. Mr. Voight has been intimately connected with the commercial development of stainless steel the past 12 years. In his new capacity he will maintain offices in the Carnegie building, Pittsburgh. He will also supervise the production and sale of stainless steel made by other subsidiary companies of United States Steel Corp.

Frank L. Gibbons, formerly vice president of the Timken Steel & Tube Co., Canton, O., has been appointed manager of sales of the newly created alloy division of Carnegie-Illinois Steel Corp. with headquarters at 208 South LaSalle street, Chicago. Mr. Gibbons has long been associated with the alloy steel industry and has specialized in the development and sale of alloy steel for over 20 years. He was previously associated with Central Alloy Steel Co. as Cleveland district manager, and later associated with Republic Steel Corp. in Cleveland, prior to his affiliation with Timken Steel & Tube Co. in 1932.

Thomas J. McLoughlin, fuel engineer at the Duquesne works of Carnegie-Illinois Steel Corp. since 1924, has been appointed assistant to W. S. Oberg, manager of operations for the company in the Pittsburgh district. Mr. McLoughlin is a graduate from the Stevens Institute of Technology with a degree in mechanical engineering and has been with the Duquesne works continuously since 1913. He is a member of the American Iron and Steel institute and a director of the Engineers' Society of Western Pennsylvania.

Douglas P. Steward, assistant general superintendent of the Lorain Steel Co. division of Carnegie-Illinois Steel Corp., has been appointed chief engineer for the Lorain district of the company. Mr. Steward is a graduate of Tufts college and was first employed by Lorain Steel Co. in 1923 as a draftsman, his services having been continuous since.

WINDOWS OF WASHINGTON



WASHINGTON

BUSINESS was adjourned last week at the nation's capital for all but one thing—answering the Al Smith speech.

At every press conference, at every session of the senate and house the speech bobbed up, and every new dealer in Washington seemed to take it upon himself to make a complete answer to the former governor of New York—from Senator Robinson, of Arkansas, majority leader of the upper house, official "answerer," right on down the line to the governmental office boy.

The only new dealer who refused to make any remarks was the President himself. At one of his press conferences a newsman said: "Mr. President, Al Smith made a speech the other day." There was much laughter—even from the Chief Executive—but not a word did he say.

There was a slight pause, and finally one of the correspondents representing a democratic paper said: "It was a harangue—not a speech." So ended all reference to Governor Smith's speech at the White House.

Tax Question Unsettled

Don't misunderstand, though. Other things did happen here last week. The senate passed the bonus over the presidential veto; there was renewed talk in the capitol corridors about taxes—how to pay for the bonus and how to prevent raising taxes at this session; the opening of the convention of the United Mine Workers of America; and numerous other occurences.

The President refused also to discuss the tax situation. "We are still studying the tax situation," was all the answer he would give to queries on this subject.

In the meantime, members of congress are gathering in groups and talking the situation over in a most serious manner. It is serious because the congressmen know that they can't go home and ask for re-election right after having passed a bill calling for new and additional taxes, no matter what the purpose of the taxes may be.

It is probable that some kind of a scheme will be worked out whereby no new taxes will be levied until after election, but they are certain to come at the next session of congress if there is any possible way to stall them off until that time. In other words, now that members of congress have taken the bit in their teeth and passed the bonus, they are going to have to dig for the money with which to pay for it.

What One Veteran Will Do

An interesting sidelight on the bonus situation is the attitude of one Frederick Skelton, of this city, a world war veteran, who thinks so highly of the 19 senators and 61 representatives who voted to sustain the President's veto of the bonus bill that he is dividing his bonus equally between them "as a re-election campaign contribution."

Apropos the threat of new federal taxes, the chamber of commerce of the United States by referendum has reaffirmed its position in favor of reduction of government expenitures and tax revision. The organizations which are members of the chamber voted in favor of a more equitable tax system and to curtail drastically the current high level of expenditures.

The voting indicated that business men believe that the current excessive rate of government spending is discouraging business recovery and retarding employment. Ninety-nine per cent of the votes cast urged such a reduction in federal expenditures as would in the near future bring about a balanced budget without increased taxes.

During the past week, also, Secretary of Commerce Roper submitted a preliminary report to the President on the NRA situation. Among other things included in the report, it is stated on the best authority, is a statement relative to Maj. George L. Berry and his so-called council for industrial recovery.

Mr. Roper points out, it has been indicated, that this council and his own business advisory council, set up several years ago, are moving along parallel lines and virtually duplicating the work of one another. While Mr. Roper does not recommend that the Berry organization be disbanded, he does urge that if the Berry organization is allowed to continue it be put under the jurisdiction of Miss Perkins' department of labor, where it properly belongs.

In connection with the Berry organization, the major has called a meeting of all of his committees for this city on Feb. 10, at which time they are supposed to report on the various subjects they were assigned. Officials in charge of this work contend that the members of the committees have been working "frantically" on their subjects and exchanging information between themselves.

Berry To Give Up Ghost?

However, inquiries to several members of the committees show that at least those approached have not heard a word about their subjects since the last meeting of the council. This fits in with the way the Berry outfit has worked from the beginning of this fiasco.

As indicated in this column last week, there have been insistent stories for some time now that the major is about to give up the ghost and let his dream vanish. However, there are still no tangible signs of it as this is written.

Representative Tinkham, of Massachusetts, veteran member of the house, has stated that the neutrality bill reported by the house committee on foreign affairs is not a neutrality bill; he declares that it makes the United States merely a puppet

state of Great Britain and a subsidiary of the league of nations.

"Section 4 of the bill," said Mr. Tinkham, "gives the President discretionary power at any time during the progress of a war to impose embargoes on all articles and materials—including steel—which he determines can be used in the conduct of war."

Mr. Tinkham said further:

"The President should not be given discretionary power to impose embargoes on articles and materials used in the conduct of war at any time during the progress of a war. The bill should compel him to impose such embargoes automatically upon his declaring that a state of war exists, as he is compelled to do in relation to arms, ammunition and implements of war.

"In modern warfare, articles and materials used in the conduct of war are as essential to warring nations as are arms, ammunition and implements of war. Therefore, this discrimination between arms, ammunition and implements of war, and articles and materials used in the conduct of war, in the matter of embargoes, is indefensible and illogical. It is also hostile to the peaceful aspirations of the American people."

Mine Workers Convention

John Lewis' mine workers organization, which last week began holding its meetings in the constitution hall of the D.A.R, will remain for another week. The coffers of the organization are full. It was reported that it has on hand at this time $2,300,000, and does the A. F. of L. expect to disband that? There is a very definite feeling here among those who have been watching Mr. Lewis and his tactics that he will fight President Green of the A. F. of L. to a finish and finally finish Mr. Green on the issue of vertical organization of mass production industries, including steel.

During the course of the debate at the convention, Mr. Lewis stated that it would be called upon to express itself on "major political problems of moment" and then in another breath he harangued the executive council of the A. F. of L. for its fight on the industrial union movement favored by the mine workers and said that the convention would express itself on that point too—before adjournment.

Officers of the convention called on the miners present to sustain the President and to back legislation looking toward a curb on the powers of the Supreme Court.

Dealing with the subject of industrial versus craft unionism, Mr. Lewis described the federation as convulsed within itself. Referring to the recent order of the executive council of the federation from Miami instructing Mr. Lewis and his aides to break up their committee formed to push industrial unionism, he said that the council "seems to have buried its heads in the golden sands of Florida unmindful of the sentiment in favor of organizing mass production unions by industry instead of craft."

NYE GETS ENOUGH FUNDS TO QUIZ STEEL REPRESENTATIVE

Notwithstanding the bitterness precipitated by his attack on the integrity of President Wilson, Senator Nye succeeded last week in wangling a small appropriation from the senate to carry on his munitions investigation long enough to put at least one representative of the steel industry in a hot spot.

Senator Nye's candidates for this position, and out of whom he expects to wring testimony to support a strict neutrality position, include Eugene G. Grace, president, Bethlehem Steel Corp.; H. L. Frevert, president, Midvale Co.; B. F. Fairless, president, Carnegie-Illinois Steel Corp., and D. Carson Adkerson, president, American Manganese Producers' association. No one yet has been selected and no date has been set for the hearing.

TO NAIL CONCRETE HOUSES!

The steel industry will undoubtedly be interested to know with what efficiency certain branches of the government are run.

There is a new project to be undertaken under the direction of Poo Bah Tugwell located at Berwyn, Md., a short distance from Washington, where some thirty houses are to be erected. It is unofficially known as Tugwelltown.

The procurement division of the treasury department recently opened bids for 2500 tons of reinforcing steel for these thirty houses. Bids are now out for 3800 kegs of nails for these same houses.

Now that the bids are in on the reinforcing steel, it has occurred to some bright government official that some mistake has been made.

Died:

EDWARD JOHN SCHNEIDER, 60, contracting manager, bridge and structural department, Columbia Steel Co., San Francisco, a subsidiary of the United States Steel Corp., in Berkeley, Calif., Jan. 25.

He was born in Pontiac, Ill., where he received his early education and later graduated from the University of Illinois, college of sanitary engineering in 1900. He spent his entire business life in the design, contracting, and erection of fabricated steel structures, and practically his entire career with one of the subsidiaries of the Corporation.

He was a past president of the Engineers' Club of San Francisco, and the San Francisco section of the American Society of Civil Engineers. He was a member of the Western Society of Engineers, and numerous clubs.

♦ ♦ ♦

Edward H. Headford, president, Headford Bros. & Hitchins Foundry Co., Waterloo, Iowa, in Waterloo, Jan. 21.

♦ ♦ ♦

Charles W. Gray, 80, formerly southern sales manager for the United States Pipe & Foundry Co., in Birmingham, Ala., Jan. 27. He retired from active business ten years ago.

♦ ♦ ♦

George D. MacKinnon, 62, former general manager of the MacKinnon Steel Co., in Sherbrooke, Que., Jan. 24. He had retired several years ago.

♦ ♦ ♦

Don Allen Curtis, 59, in Jamestown, N. Y., Jan. 25. He formerly held major executive positions with the Lucas Machine Co., Curtis Machine Co., Jamestown, and the Empire State Oil Co., Casper, Wyo.

♦ ♦ ♦

Ernest E. Snyder, 44, steel buyer for the Ford Motor Co., Detroit, in that city Jan. 26. Mr. Snyder had been associated with the Ford company for the past 24 years and for many years had been engaged in the buying of steel.

♦ ♦ ♦

D. T. Sipe, 60, president, Brighton Electric Steel Casting Co., Latrobe, Pa., in Latrobe, Jan. 23. He was one of the organizers of the Vanadium-Alloys Steel Co., Latrobe, and the Braeburn Alloy Steel Corp., Braeburn, Pa. He was a director of the Vanadium-Alloys Company, and in addition was an operator of coal mines.

♦ ♦ ♦

Stanley Hert Fields, 52, vice president, Koppers Products Co., Pittsburgh, a subsidiary of the Koppers Co., at Pittsburgh Jan. 24. In 1905 he was first identified with the American Creosoting Co., and later helped organize the American Tar Products Co., Chicago, of which he became vice president. In 1925 the latter firm became the Koppers Products Co.

♦ ♦ ♦

William R. Jeavons, 74, inventor of a wickless oil burner and holder of several oil stove patents, in Cleveland, Jan. 24. In 1869 Mr. Jeavons went to Cleveland from England and was associated with his father and brother in the japanning and enameling business. He was connected with the Florence Stove Co. and the Perfection Stove Co., being head of the experimental department of the latter company at the time of his retirement in 1912. He was a director of the Pennsylvania Rubber & Supply Co., the Dodd Supply Co., and vice president and treasurer of the J. H. R. Products Co.

Men of Industry

ROBERT E. KINKEAD, well-known consulting engineer on welding, has been retained by Carnegie-Illinois Steel Corp., Pittsburgh, to make a survey of its welding operations. Mr. Kinkead, a graduate of Ohio State university in 1913, is a mechanical engineer, and has specialized in welding throughout his entire career. Since 1927 he has been engaged in professional consulting work for a number of engineering and manufacturing concerns.

Robert E. Kinkead

♦ ♦ ♦

S. E. Lauer, formerly general sales manager of the York Ice Machinery Corp., York, Pa., has been elected vice president in charge of sales.

♦ ♦ ♦

Adolph F. Schoepflin, formerly plant superintendent of the Batavia, N. Y., plant of the Doehler Die Casting Co., Toledo, O., has been made works manager of the plant.

♦ ♦ ♦

Miles E. Standish has been named sales manager of the Marble-Card Electric Co., Gladstone, Mich. Mr. Standish received his education in electrical engineering at the University of Wisconsin. His prior connections included Louis Allis Co., Burke Electric Co., and Imperial Electric Co.

♦ ♦ ♦

Johannes Erler, metallurgist, Farrel-Birmingham Co., Ansonia, Conn., has been selected as the author of the American Foundrymen's association exchange paper to the international foundry congress in Dusseldorf, Germany, Sept. 15-20, 1936. The paper will be entitled, "Studies of Casting Stresses in Chilled Iron."

Born in Leipzig, Germany, in 1900, Mr. Erler received both his preliminary and advanced education in that country. He began his industrial career in this country in 1926, when he became associated with the Carus Chemical Co., La Salle, Ill., as chemist. In 1928 he took a position as metallographist at the Wilson Foundry & Machine Co., Pontiac, Mich.; in 1930, he became associated with the Eastern Clay Products Co., Buffalo, as sales engineer, and in 1932, he became metallurgist, for the Farrel-Birmingham Co.

Mr Erler is a member of the A.F.A., the American Society for Testing Materials and the Verein Deutscher Giessereifachleute, Germany.

♦ ♦ ♦

W. W. French, for 40 years connected with the Moore-Handley Hardware Co., Birmingham, Ala., a leading mill supply firm, has been elected president of the company, succeeding the late J. D. Moore.

♦ ♦ ♦

John H. Fogwell has been appointed manager of the Pittsburgh district warehouse of Scully Steel Products Co. He succeeds James H. Goff, who died recently.

♦ ♦ ♦

I. Lamont Hughes, executive vice president of Carnegie-Illinois Steel Corp., Pittsburgh, was elected president of the Engineers' Society of Western Pennsylvania, Jan. 28, and was officially installed at the annual reception held in the William Penn hotel, Pittsburgh, the same day.

R. L. Mead

Made manager of the Chicago office of the Harnischfeger Corp., Milwaukee, as noted in STEEL for Jan. 20. He will take charge of sales covering the complete Harnischfeger line in the Chicago territory

♦ ♦ ♦

P. D. Pifer has been re-elected president of the Fostoria Pressed Steel Corp., Fostoria, O. Other officers who were re-elected include E. L. Bates as vice president, and R. J. Carter as secretary-treasurer.

♦ ♦ ♦

Darwin S. Luntz, president of the Luntz Iron & Steel Co., Canton, O., has been elected president of the Institute of Scrap Iron and Steel Inc.,

Darwin S. Luntz

succeeding Joel Claster, of Luria Bros. Mr. Luntz has been engaged in the scrap iron business for 24 years. In 1916 he founded the Luntz Iron & Steel Co., which also has branch offices in Cleveland and Kokomo, Ind. Mr. Luntz is president of the Canton chamber of commerce, and recently sponsored and organized the civic affairs commission of Canton.

♦ ♦ ♦

Charles G. Durfee, for the past four years, manager of the systems department of the Pyrene Mfg. Co., Newark, N. J., has been named assistant to the vice president in charge of sales. He has been with the Pyrene company for eight years.

♦ ♦ ♦

S. C. Partridge has been made assistant general manager of the industrial division of the Timken Roller Bearing Co., Canton, O. Graduating from the engineering school of McGill university in 1925, he spent the following four years in the field on engineering work for the government.

He joined the Timken organiza-

Fred E. Kling

Who as noted in STEEL for Jan. 6 has been appointed assistant chief engineer of Carnegie-Illinois Steel Corp., with headquarters in Pittsburgh. He has been associated with the Carnegie company for 34 years

tion in 1925, working first in the shop and then in the engineering department. In 1926 Mr. Partridge was sent to Buffalo, where he had charge of the Timken industrial district office for the next two years. In 1928 he was made manager of the Timken Roller Bearing Co. Ltd., Toronto, in charge of both automotive and industrial sales. His next advance was to the Detroit office, where he assisted E. W. Austin, general sales manager, automotive division, which position he filled until his present appointment as assistant to W. B. Moore, general manager of the industrial division at Canton.

Other Timken promotions include F. B. Yates to manager of the New York district office, and S. C. Merrill to eastern district manager of the automotive division, with headquarters in Detroit.

Mr. Yates joined the Timken organization in 1926, after receiving his degree in mechanical engineering from the Sheffield Scientific school of Yale university, spending his first year in the special training course covering both shop and engineering practice in bearing manufacture and application. After spending some time in the Chicago district office, he was transferred to New York in 1928, and now takes charge of that office.

R. W. Powers, a graduate from the engineering college of the University of Michigan in 1931, has been transferred from the Canton engineering department to New York as sales engineer, assisting Mr. Yates.

Mr. Merrill, a graduate mechanical engineer, Columbia university, 1917, spent several years in the New York territory in production and sales work before joining the Timken organization in 1924. Since then he has been manager of the New York district office, and during the past year has been handling automotive applications as well as those in the industrial field.

♦ ♦ ♦

Lester W. Seago has been made eastern district manager of the Ready-Power Co., Detroit, with offices at 1775 Broadway, New York. In his ten years association with the Ready-Power Co. he has traveled in practically every state of the union and contacted nearly every user of electric-driven industrial trucks.

Wesley Davey, who has been with the company for more than five years, has been named by Mr. Seago

Louis C. Edgar

Who as announced in these columns Jan. 6 has been appointed chief engineer of the Pittsburgh district for Carnegie-Illinois Steel Corp. He formerly was chief engineer at the Edgar Thomson works, Braddock, Pa., of Carnegie-Illinois

to take charge of all Ready-Power service in the eastern territory.

♦ ♦ ♦

W. L. Reineke has been appointed Chicago district manager of Aluminum Industries Inc., Cincinnati, O., manufacturer of permite products, with headquarters at 616 South Michigan avenue. He assumed his new duties Jan. 9.

Mr. Reineke joined the Permite organization after several years as sales representative, for the Advance Car Mover Co., Appleton, Wis. Prior to that, he was with the Torchweld Equipment Co., Chicago, and the Thermoid Rubber Co.

♦ ♦ ♦

L. A. Schlueter, for three and one-half years manager of the Koppers Products Co. plant at Carrollville, Wis., near Milwaukee, on Feb. 1 will assume new duties in the production department at the company's headquarters in Pittsburgh. He will be succeeded by G. E. Traut, now with the Koppers company at Utica, N. Y.

♦ ♦ ♦

John C. Long, manager of publications, Bethlehem Steel Co., Bethlehem, Pa., will represent the Bethlehem company in the Asssociation of National Advertisers, New York, to which the Bethlehem company has been elected to membership.

♦ ♦ ♦

Henry F. Lepan has been named general sales manager, and Ira Flatt, general factory manager, for Wilson & Bennett Mfg. Co., 6532 South Menard avenue, Chicago, manufacturer of steel pails, drums and barrels, with factories and offices also in Jersey City, N. J., and New Orleans. Both Mr. Lepan and Mr. Flatt have been associated with the company for 14 years and have had wide experience in the various departments of their respective branches of the company's business.

♦ ♦ ♦

R. M. Buckingham, formerly vice president and general manager, McAleer Mfg. Co., Detroit, has organized his own company, the Buckingham Products Co., Detroit, to engage in the manufacture and sale of polishing and buffing composition. The company is now in full production and is in position to take care of all requirements of polishing and buffing composition.

Associated with Mr. Buckingham are P. A. Patterson as secretary, and J. R. Anstey as treasurer. These men were also formerly associated with the McAleer organization.

Reuben D. Abbiss

Who was appointed chief engineer of the Edgar Thomson works of Carnegie-Illinois Steel Corp., as noted in STEEL for Jan. 6. He has been in the employ of the Carnegie company at this one division since August, 1910

Editorial

Debunking the Washington View on Unemployment

FOR sheer nonsense it would be hard to beat the antics of the congressmen who profess to be the friends of organized labor. The latest threat of this misguided bloc is a proposal to do something about labor-saving equipment. They would enact laws to curb mechanization, believing that such legislation would promote employment.

This most recent bit of tomfoolery is the outcome of a series of new deal and organized labor attacks upon the machine. In the days of NRA many of the vociferous brain trusters were openly hostile to the idea of efficiency in production and manufacturing. Even General Johnson, who knew better, once said that it would be wise to let up on labor-saving devices at least temporarily.

The issue seemed to lie dormant for a while after NRA expired, but several weeks ago William Green of A. F. of L., who also knows better, complained of the slow rise in employment, stating that it is due to the fact "that while technological improvements in industry are steadily reducing the number of workers necessary to provide all the goods industry can market, the number of men and women who want work is steadily increasing. Since 1929, 4,000,000 persons have been added to the army of job seekers but, in manufacturing industries alone, production per man per hour has increased 25 per cent, making it possible to turn out the 1929 volume of product with 1,800,000 fewer workers, if plants operate at 1929 work hours."

Have Exaggerated Idea of Ability of Industry To Absorb Unemployed

The trouble with Mr. Green's argument is, first, that he assumes that technological progress is a destroyer of jobs and, secondly, that he has a distorted view of the proportion of unemployment that rightfully belongs to industry. On this latter point, he, like many others possessed of an anti-business complex, has a wildly exaggerated idea of the number of persons industry can or should employ.

This point was ably discussed by W. J. Cameron of the Ford Motor Co. in a recent radio talk. He said that "government officials are demanding that industry employ at once the 11,000,000 persons who Washington says are unemployed, or take the consequences." He then quoted the *Statistical Abstract* of 1934 to show that of the 48,000,000 normal jobs in the United States, 10,000,000 are in agriculture; 10,000,000 are in public and personal service—public officials, teachers, lawyers, doctors, nurses, cooks, entertainers, etc.; from 8,000,000 to 10,000,000 are in wholesale and retail trade; 4,000,000 are in transportation and communication; 4,000,000 are in the construction of buildings, streets and highways; and 1,500,000 are in forestry, fishing and mining.

These groups, together with other smaller ones not classified by the government as industry, account for 40,000,000 normal jobs. The remaining 8,000,000 normal jobs are in industry.

According to the National Industrial Conference Board the highest number of employes in the manufacturing industries was in 1929 when 8,800,000 workers in plants and 1,500,000 workers in offices were on their payrolls. According to the same authority, if activity returns to 1929 levels, industry will be able to absorb about 2,800,000 of the present unemployed. Since industry now is employing about 9,000,000 persons, the total at the 1929 rate of activity would be 11,800,000, which is 1,500,000 more than were actually employed in the peak of 1929.

On Basis of 1929 Activity, Industry Would Employ More Than Its Quota

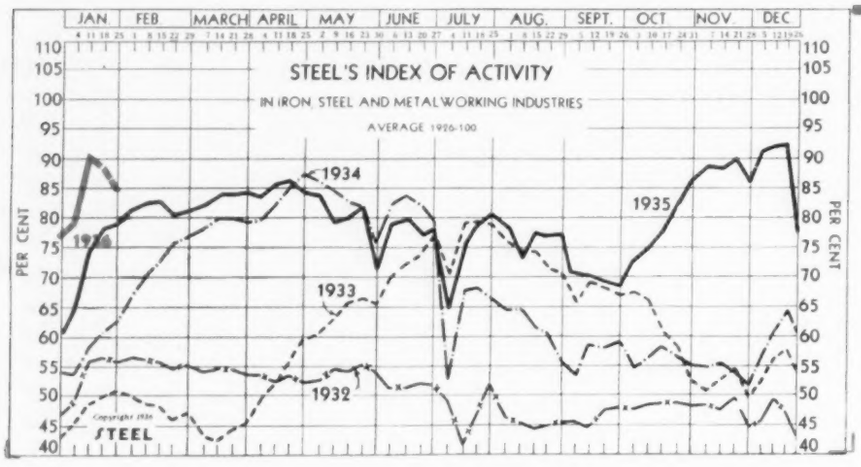
Contrast this with Mr. Green's statement that under 1929 conditions industry would be employing 1,800,000 fewer persons and you will find a discrepancy of 3,300,000.

According to the government figures quoted by Mr. Cameron, industry has 8,000,000 of the 48,000,000 normal jobs. This is 16.67 per cent. The Conference board estimates that industry, if operating at 1929 levels could absorb 2,800,000 of the 11,000,000 unemployed. This is 25 per cent. In other words, while its quota is 1,833,700 or 16.67 per cent, it will employ 2,800,000 or 25 per cent of the unemployed when activity again is at 1929 levels. It will exceed its quota by 966,300 jobs or 52 per cent.

Contrast this picture with the threat of certain new dealers that "industry hire the 11,000,000 unemployed or else," and you grasp the absurdity of demagoguery gone haywire.

WPA has allotted $12,000,000 to research, one phase of which will deal with the influence of the machine upon employment. We respectfully suggest that these hard-earned millions of the taxpayers be devoted to a study of the damning effect of idiotic federal legislation upon employment. If conducted impartially, the study would be well worth the expenditure.

THE BUSINESS TREND



STEEL'S *index of activity in the iron, steel and metalworking industries declined 3.5 points to 85.8 in the week ending Jan. 25:*

Week ending	1935	1934	1933	1932
Nov. 16	88.8	55.2	52.6	49.2
Nov. 23	90.0	54.4	55.4	44.5
Nov. 30	86.0	51.9	49.7	45.3
Dec. 7	91.7	56.8	52.6	46.6
Dec. 14	91.8	60.6	56.0	49.3
Dec. 21	91.9	64.4	58.0	46.9
Dec. 28	77.3	60.8	53.7	42.9
	1936	1935	1934	1933
Jan. 4	78.2	65.4	53.6	45.3
Jan. 11	90.2	73.8	58.1	48.6
Jan. 18	89.3†	78.1	60.9	49.8
Jan. 25	85.8*	79.5	62.3	50.8

†Revised *Preliminary.

The index charted above is based upon freight car loadings, electric power output, automobile assemblies (estimated by Cram's Reports) and the steelworks operating rate (estimated by STEEL*). Average for 1926 equals 100, weighted as follows: Steel rate 40, and car loadings, power output and auto assemblies each 20.*

Does January Trend Portend Year of Minor Fluctuations?

INDUSTRIAL ACTIVITY continues to ease off gradually. STEEL's index now has receded in two successive weeks—an unusual occurrence in January. During a period of seven years—from 1929 to 1935 inclusive—the index declined only once in a January week. That single relapse occurred in the fourth week of January, 1932, and later events showed that it was the forerunner of a listless state of business which continued throughout the remaining 11 months of the year.

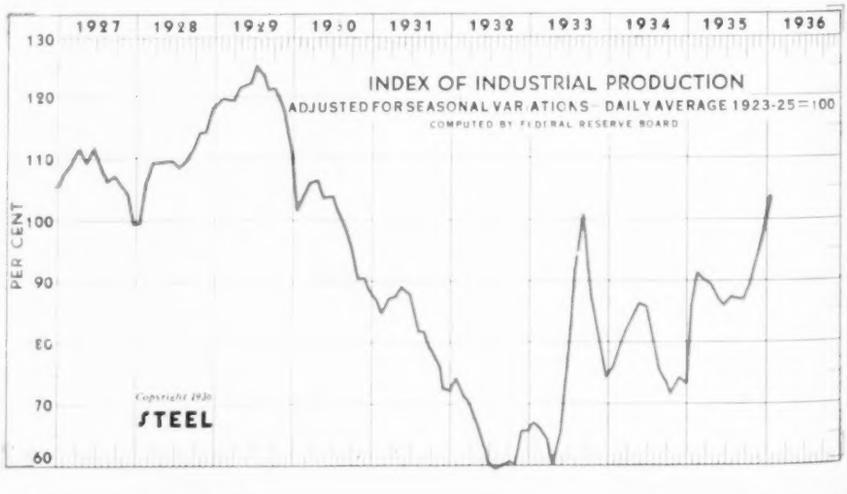
The chief characteristic of activity in 1932, aside from its extremely low level, was its uniformity throughout the year. The curve of 1932 was devoid of violent fluctuations. If the behavior of the trend of activity thus far in January 1936 is an indication that the curve will not fluctuate severly in the ensuing 11 months, then we can expect 1936 to come pretty close to the predictions of the forecasters.

To test this assumption, graft the curve for 11 months of 1932 onto the January curve for 1936. This gives an almost level trend for the first six months, a break for the July and September holidays and a level but slightly higher trend in the fall. Should industrial activity follow this fanciful curve rather closely, the volume of business would exceed that of 1935 by 10 to 20 per cent, which is roughly the gain that the economists predicted.

The catch in this sort of conjecture is that we cannot be sure yet that industry has struck its 1936 stride. Right now it seems to be tentatively feeling its way. Power output seems to be settling into its expected groove at a high level. Weather is a factor in the fluctuations of weekly car loadings. The movement of the steelworks operating rate still is uncertain. Automobile assemblies are lagging.

Apparently we must wait a few weeks longer before we can understand the drift of the 1936 trend line.

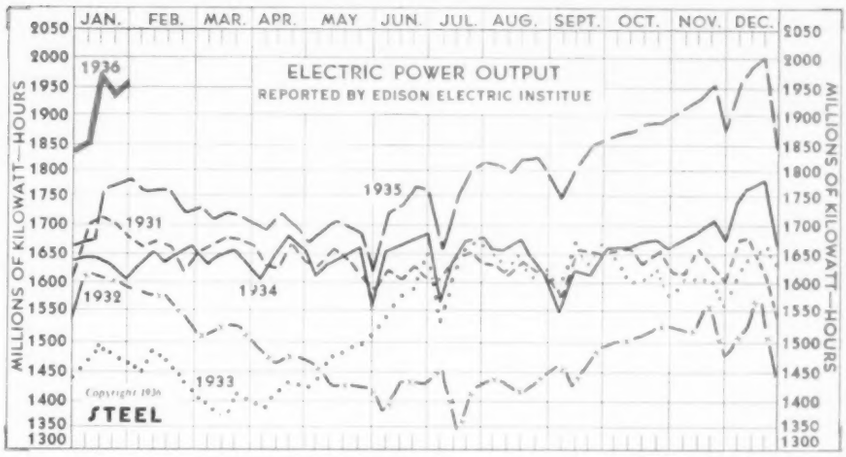
	1935	1934	1933	1932
January	91	78	65	72
February	89	81	64	69
March	88	84	60	67
April	86	85	67	63
May	85	86	77	60
June	86	84	91	59
July	86	75	100	58
August	87	73	91	60
September	89	71	84	66
October	95	73	77	67
November	98	74	73	65
December	103	86	75	66


1927 1928 1929 1930 1931 1932 1933 1934 1935 1936
INDEX OF INDUSTRIAL PRODUCTION
ADJUSTED FOR SEASONAL VARIATIONS - DAILY AVERAGE 1923-25=100
COMPUTED BY FEDERAL RESERVE BOARD
PER CENT
STEEL

Electric Power Output Continues at High Level

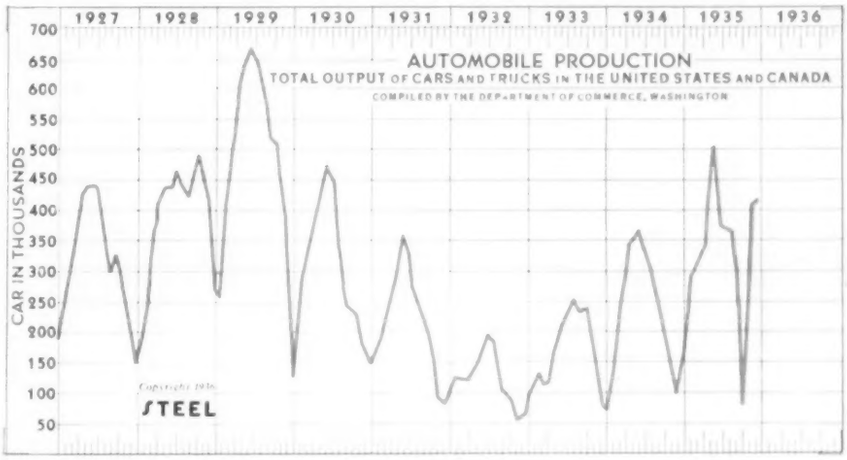
Millions Kw.-Hrs.

	1936	1935	1934	1933
Jan. 25	1955	1781	1611	1469
Jan. 18	1949	1778	1625	1484
Jan. 11	1970	1772	1646	1495
Jan. 4	1854	1668	1564	1461
	1935	**1934**	**1933**	**1932**
Dec. 28	1847	1650	1539	1415
Dec. 21	2002	1788	1657	1554
Dec. 14	1983	1767	1644	1563
Dec. 7	1970	1743	1619	1519
Nov. 30	1877	1684	1554	1510
Nov. 23	1953	1705	1608	1475
Nov. 16	1939	1691	1617	1532
Nov. 9	1914	1675	1617	1521
Nov. 2	1897	1669	1583	1525



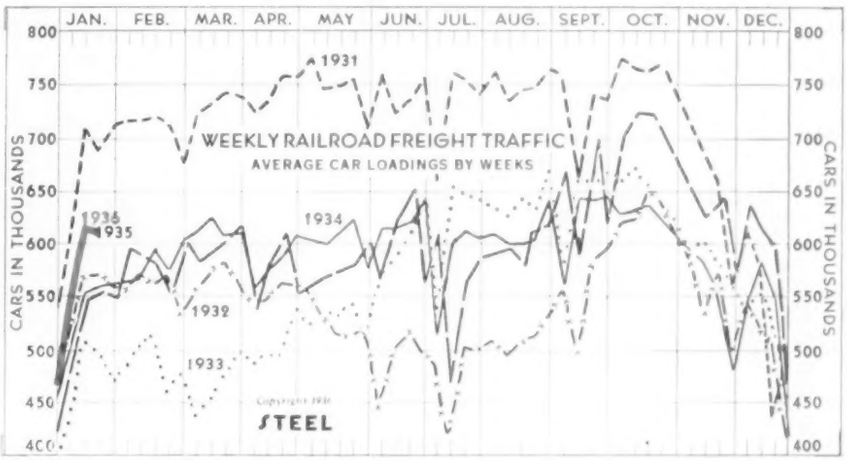
Automobile Production Up Slightly in December

	1935	1934
January	303,372	162,570
February	358,658	238,827
March	451,809	352,614
April	501,837	371,338
May	385,486	350,616
June	377,065	320,382
July	350,118	276,047
August	247,743	244,715
September	95,128	175,586
October	283,334	135,771
November	411,520	85,179
December	421,579	156,356


1927 1928 1929 1930 1931 1932 1933 1934 1935 1936
AUTOMOBILE PRODUCTION
TOTAL OUTPUT OF CARS AND TRUCKS IN THE UNITED STATES AND CANADA
COMPILED BY THE DEPARTMENT OF COMMERCE, WASHINGTON
CAR IN THOUSANDS
STEEL

Car Loadings Register Slight Downward Movement

	1936	1935	1934
Jan. 18	611,408	562,900	560,400
Jan. 11	615,028	553,518	557,266
Jan. 4	541,984	497,274	500,813
	1935	**1934**	**1933**
Dec. 28	466,679	425,404	454,765
Dec. 21	599,534	548,478	531,464
Dec. 14	615,237	580,202	559,419
Dec. 7	637,133	551,490	541,992
Nov. 30	570,427	488,185	499,596
Nov. 23	646,503	561,942	585,738
Nov. 16	628,330	585,034	602,708
Nov. 9	653,525	594,790	583,075
Nov. 2	680,662	613,048	614,136

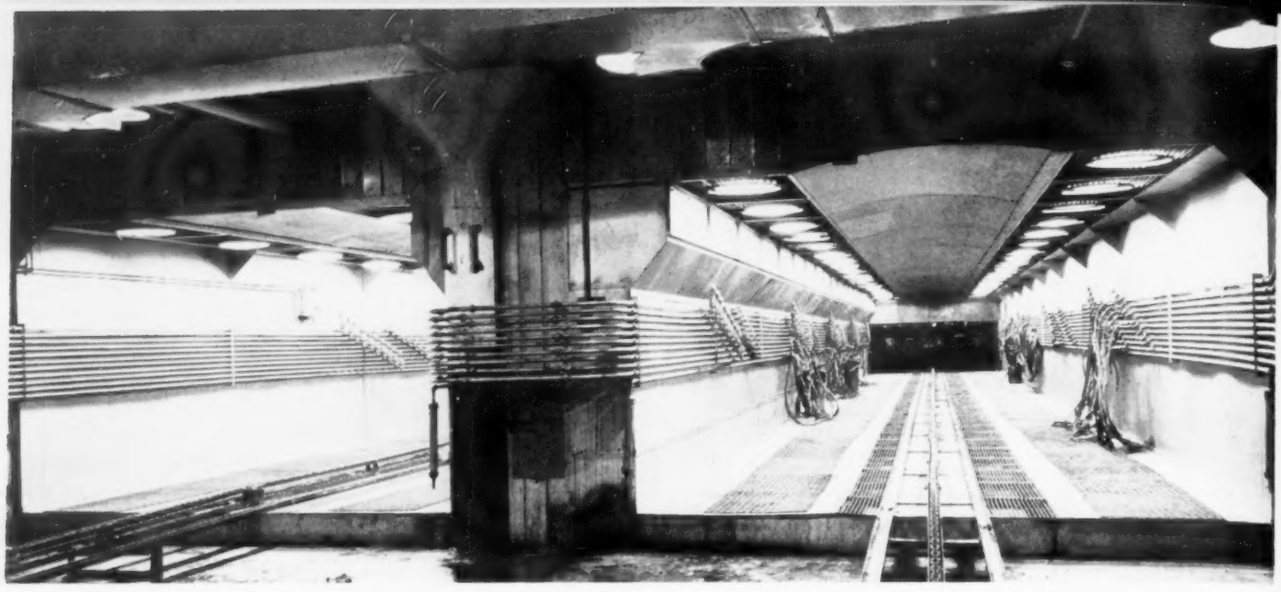


December Building Awards Highest Since 1931

Square Feet

	1935	1934	1933
Jan.	11,245,100	9,568,700	8,453,000
Feb.	9,670,300	8,176,300	7,382,400
Mar.	15,873,100	14,788,900	9,890,000
Apr.	19,981,100	14,207,100	10,870,000
May	22,276,200	14,664,400	15,277,000
June	22,878,800	13,986,500	16,199,500
July	21,565,900	13,250,000	14,605,600
Aug.	21,545,400	14,259,000	12,942,000
Sept.	21,365,700	12,510,300	13,365,400
Oct.	27,775,900	15,098,100	15,531,700
Nov.	24,120,700	12,780,800	11,762,300
Dec.	33,441,900	9,188,700	11,451,500

1927 1928 1929 1930 1931 1932 1933 1934 1935 1936
BUILDING CONSTRUCTION
CONTRACT AWARDS IN 37 STATES
COMPILED BY F. W. DODGE CORP.
MILLIONS OF SQUARE FEET
STEEL



VIEW through two continuous production spray booths at a large auto body plant, showing banks of paint circulating pipelines

Paint Circulating Systems Provide Saving on Labor, Equipment and Material

Central Mixing Tanks and Distributing Pipelines, Installed at Automobile Body Plant, Permit Accurate Control of Colors, Speed Up Production Finishing Work

INSTALLATION of paint circulating systems in several large automobile plants has prompted the question: What are the advantages of this system over the older methods of spray painting from individual containers or pressure tanks?

A typical paint circulating system involves a central battery of paint mixing tanks in which the various colors to be used are stored and kept thoroughly mixed by motor-driven agitating paddles. From these tanks paint is pumped through pipelines, one line for each tank, to the point where the finish is applied.

In the spray booth, a gun is attached to each paint line, and a change in color is made easily by simply picking up a different gun. Pressure is maintained at the proper level by means of regulators in the distributing pipelines. Close control of color and consistency is possible by adjusting the mixture in the tanks, gages on the latter showing amounts of lacquer and thinner as they are added.

Usage Determines Savings

Both a reduction in costs and an improvement in the quality of the finished product are reported by one large automobile plant in which a circulating system has been installed by the Binks Mfg. Co., Chicago. Savings, naturally, will be in proportion to the usage of the system and the skill of the operators will determine the improvement in quality.

Savings in labor, equipment and materials were effected by this manufacturer. It is estimated that $10,000 is saved annually on the basis of 70,000 jobs.

The wages of two paint changers and one trucker were eliminated by the installation. In some plants special changers are not provided and the operator must change his own paint. This involves shutting down the line which, if production and overhead costs are considered, involve more than the labor cost alone.

Reduction in equipment necessary for the 70,000 jobs included the elimination of 115 trucks to carry fenders, hoods, splash aprons and the like from the finished work bank to the assembly line. With the circulating paint system these parts can be sprayed in any color without delay,

and the day's production can be established.

"Banks" also are eliminated by the system. Small parts can be delivered at the point of car assembly by means of a conveyor system so that bodies and parts arrive at this point finished in their proper colors.

Losses of paint during color changes at the booths are reduced. Tests were conducted at the previously mentioned plant to determine the amount of paint that actually can be saved by elimination of the booths. The tests were based on spraying 300 sets of sheet metal (100 square feet per car set). The savings on the cleaning of the individual paint containers amounted to about three gallons of paint on 1690 jobs, not taking into account the savings brought about by the smaller quantity of thinner used for cleaning.

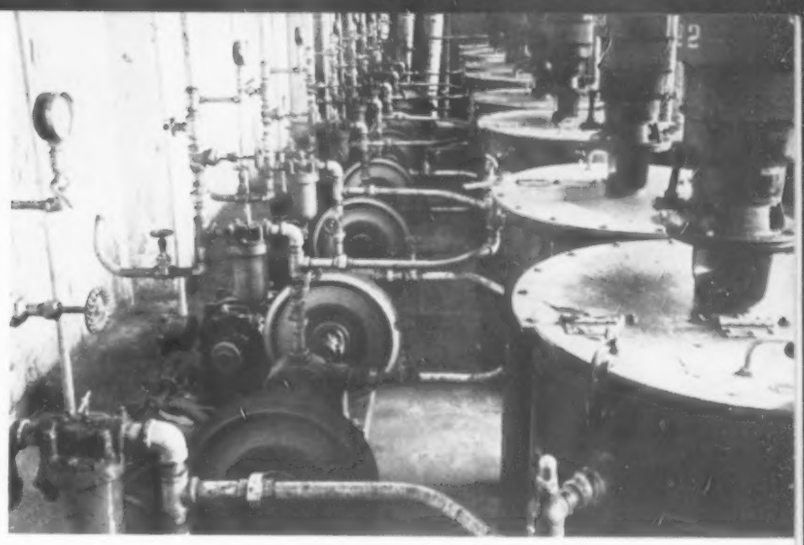
Improvement in the quality of the finish was obtained by accuracy of control over the gun pressure. This accuracy made it possible to hold the film thickness of the finished coat uniform in relation to the line speed. Since the line foreman, alone, is in charge of the handle regulator key for the paint system, the exact pressure required at a given speed for desired results can be maintained constantly.

Mixing paint in greater quantities than heretofore more nearly insures true colors, it is said. With the circulating system, paint is mixed in sufficient quantities at one time for all the operators. The possibility of mixing off color paints is reduced to a minimum.

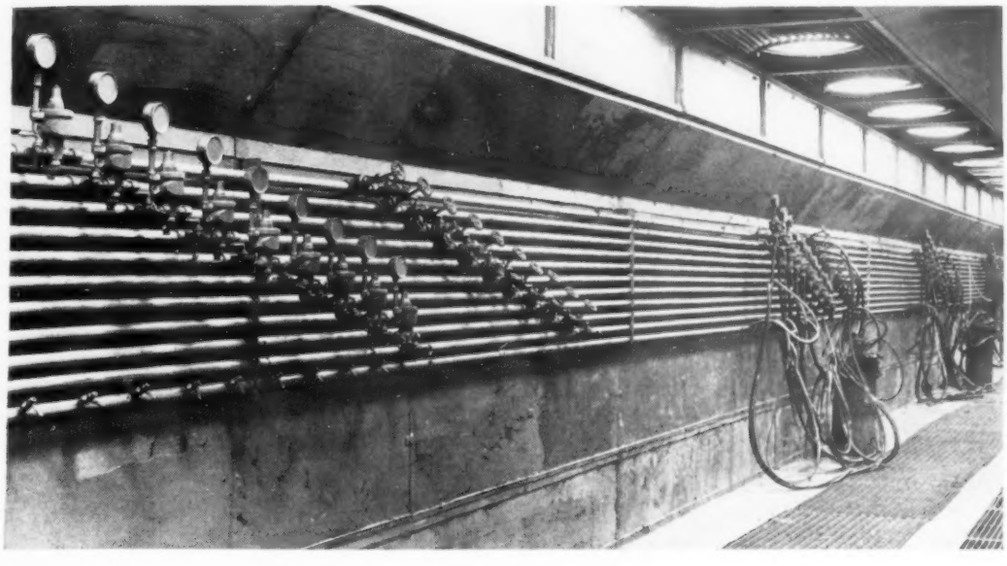
Paint can be mixed on a weight basis instead of by volume and the viscosity of the mixture can be accurately controlled by the use of hydrostatic gages in the system. Proper mixing and continuous agitation of the paint also is insured at all times. Since the paint is cleaner and the viscosity of the paint, once established, can be controlled in the mixing room, the spraying is improved.

The circulating system makes it possible to convey to all spray booths at the same time, if desired, properly mixed paints for various color combinations. Thus, the necessity for maintaining mixed paints in various colors in extra containers is eliminated. This not only eliminates the trucking and handling of paint, but reduces the occupancy of floor space to the minimum.

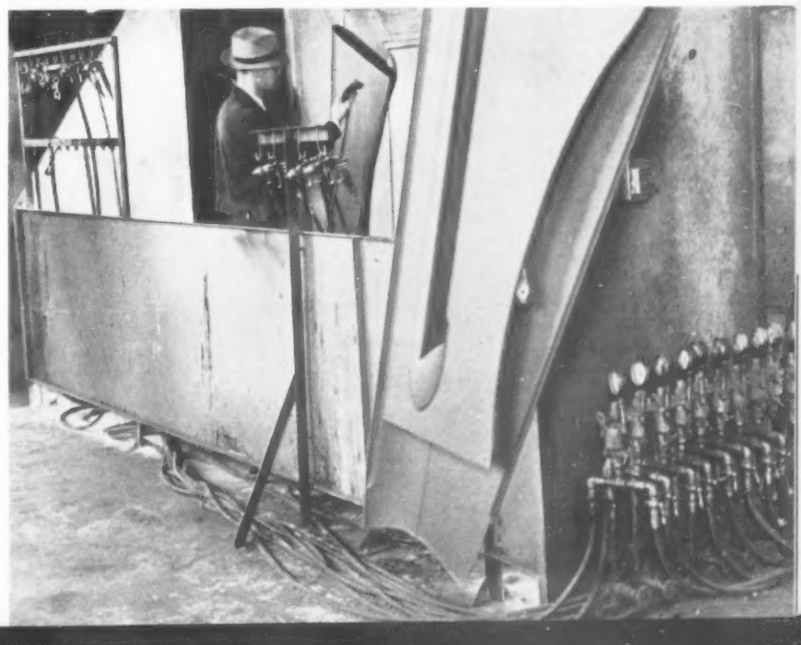
The cost of paint and labor for



GENERAL view of the paint mixing tanks showing paint circulating pumps, pipe strainers and piping. Tanks have 60-gallon capacity with vertical electric motors for driving paint agitating paddles



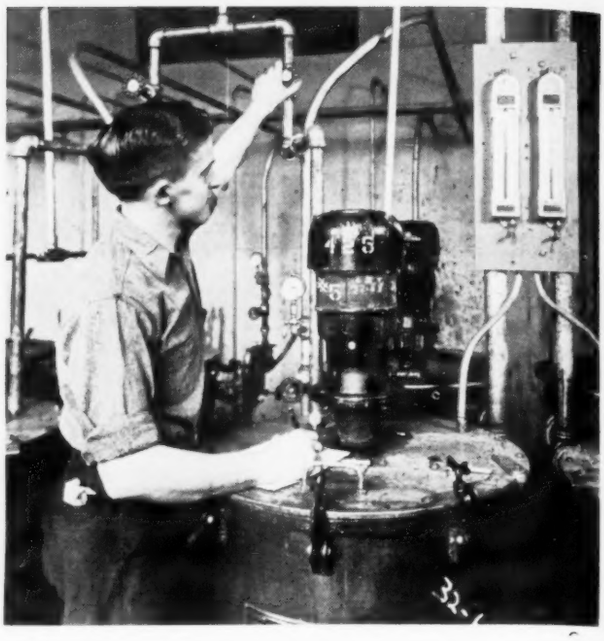
CLOSE-UP view of paint circulating pipes and paint pressure regulators in a large Detroit auto body plant, where 1690 bodies are finished daily



AN operator using a spray gun fed from the paint circulating pipes. Other sprayers are on the rack at the left. Flow of the paint is maintained at an even pressure by the regulators at the right, where distributing pipes come through the floor

cleaning dirty containers is saved, as well as effecting a reduction in the loss of thinner by evaporation in mixing. Other savings come from the elimination of cleaning pressure tanks and refill cans, and the recovery from the pipe system of paint washed from the hose, plus the thinner lost in the operation.

This system reduces the fire hazard in the plant and also conforms to insurance company requirements. The paint is conveyed to spray booths in totally closed pipe lines, and the greater percentage is retained in storage tanks in a fire-proof mixing room. Only 2.3 gallons per 100 feet of ¾ inch pipe actually is in circulation.



ASSURANCE of absolute uniformity and viscosity of paint is obtained by "weight" mixing. Clear vision gages show exact weight of lacquer and thinner added to the tanks. In this way any desired color can be matched time after time

Discuss Pearlitic Malleable Iron

PEARLITIC malleable cast iron, what it is and the nature of its properties, afforded an interesting subject for a symposium held in Cleveland, Jan. 27, under the sponsorship of the Cleveland District committee of the American Society for Testing Materials. Dr. H. A. Schwartz, manager of research, National Malleable & Steel Castings Co., Cleveland, presided at the dinner meeting which was attended by about 150.

The paper constituting the symposium was prepared by the Cleveland District committee with co-operation of various producers of the material. It was divided into three parts discussing: What constitutes pearlitic malleable cast iron and various structures which may be obtained; producers' data on manufacture and physical properties; and patents relating to the subject.

Prof. H. M. Boylston, head of the department of metallurgy, Case School of Applied Science, Cleveland, presented the first part and D. M. Avey, editor of THE FOUNDRY, Cleveland, the second part.

Pearlitic malleable cast iron was defined as a material which starts out as white cast iron and is subsequently heat treated to produce graphitization if the graphitization be terminated purposely when sufficient combined carbon remains to affect significantly the properties of the product. Two major methods of production are interrupting graphitization before completion, and reheating completely graphitized alloys.

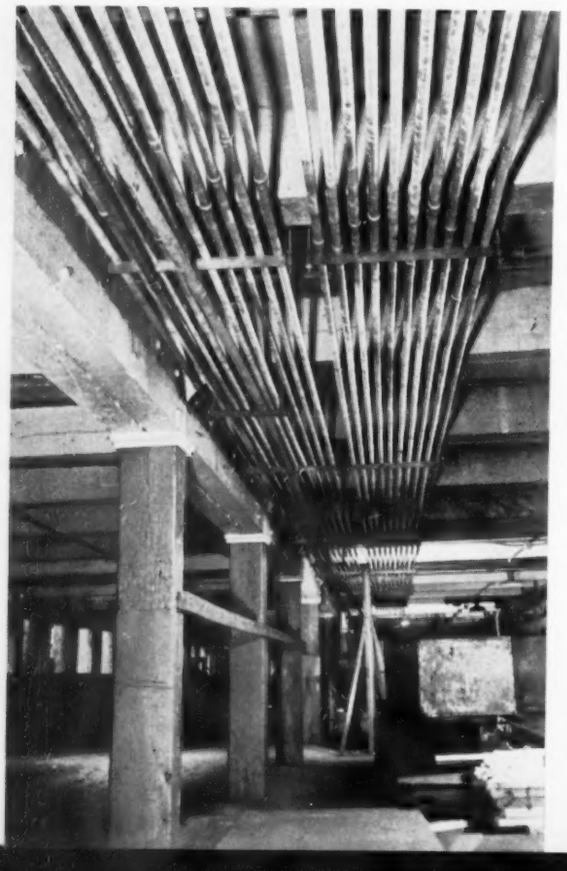
The material may be produced in the air furnace, electric furnace and the cupola. In general, it contains about 2.50 per cent total carbon, 1.50 per cent silicon, and 0.35 per cent manganese, although in some types the manganese ranges from 0.95 to 1.35 per cent.

Tensile strength of pearlitic malleable cast iron is dependent upon heat treatment which is controlled carefully, and ranges from 55,000 to 100,000 pounds and over per square inch. The elastic limit or yield point is about 75 per cent of the ultimate tensile strength, and the elongation varies inversely as the tensile strength showing from 12 to 14 per cent elongation in 2 inches for the 55,000 pounds per square inch material and 3 to 4 per cent in the case of that having 100,000 pounds per square inch tensile strength. In addition to the chemical elements mentioned previously, nickel, chromium, molybdenum and vanadium sometimes are added to attain certain improvements in physical properties.

Close Control in Composition

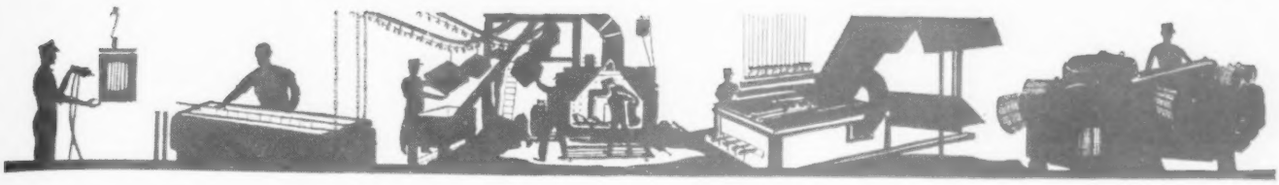
In discussion of the paper, Duncan Forbes, Gunite Corp., Rockford, Ill., pointed out that production of pearlitic malleable cast iron requires close control in composition and heat treatment to obtain uniformity of product and reproducible results. He also added that higher shrinkage and porosity are encountered so that larger gates and risers are necestary for sound castings. To an inquiry on the application of the material as bearings for automotive use, it was stated that pearlitic malleable cast iron is not suitable.

G. T. Williams, metallurgist, Cleveland Tractor Co., Cleveland, contributed some data on the tensile-impact properties of various materials including the one under discussion. He said that a 35,000 pounds per square inch tensile strength cast iron showed 3 foot-pounds; a nickel-chromium cast iron, 5 foot-pounds; Z-metal, 56 foot-pounds; and plain carbon steel with 65,000 pounds per square inch tensile strength, 191 foot-pounds.



PAINT circulating lines hung from ceiling of basement. Pipes rise to the spray booths through the floor

Surface Treatment and Finishing



Control of Electroplating

Part II

FIRST installment of this discussion on the control of electroplating appeared in this department for Jan. 27 and outlined relationships between weights of electroplated coatings and their thickness in milligrams per square inch, and set forth a recommended test for porosity of a plated coating. The present installment continues the discussion of apparatus, solutions and procedure for determination of nickel coatings, of nickel over nonferrous metals, and of copper on ferrous metals.

Determining Nickel Coatings

The following method for determining the weight of nickel coating on steel has the advantage of being rapid, simple and almost foolproof. It can be used only, however, for nickel coatings directly over steel, or ferrous alloys, since it is based on the fact that steel "passifies" at a lower current density than does nickel when electrolyzed in a cyanide solution. When tested by an impartial observer, this method gave results that checked to within 0.5 per cent, which is far greater accuracy than is actually required in commercial practice.

Apparatus

1. Direct-current milliammeter—two scales (0-1500 milliamperes and 0-150 milliamperes)
2. Direct-current voltmeter —0-10 volts
3. Battery jar (4-10 liters)
4. Motor stirrer
5. Variable resistance (1-50 ohms)
6. 12-volt direct-current power supply (2-3 amperes)
7. Thermostatic device for maintaining temperature of bath. This apparatus is set up as shown in the accompanying diagram.

Solution

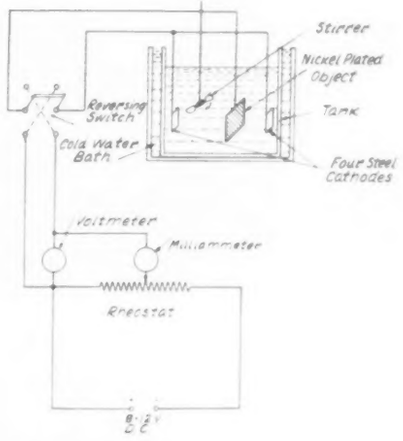
The solution shall be made by dissolving sodium cyanide (200 grams per liter) in water. Technical sodium cyanide may be used.

Care of Apparatus and Solution

1. The temperature of the stripping solution shall be maintained at 15-20 degrees Cent.
2. The solution shall be kept in constant and thorough agitation.
3. It is desirable to have four iron cathode plates, one for each side of the container, in order that the nickel may be stripped uniformly.
4. Since the current density causing passivity of the nickel decreases after the solution has been used for some length of time, the solution should be discarded after a maximum of 15 grams per liter of nickel have been dissolved.
5. At a current density of 60-65 milliamperes per square inch, a nickel anode will dissolve at the rate of approximately 1 milligram per square inch per minute.

Procedure

The part to be tested first should be cleaned carefully, weighed and



Diagrammatic representation of setup of apparatus for electrolytic stripping of nickel plating on steel

the entire surface area covered with nickel computed in square inches. Suspend the part in the solution by means of an iron wire, start the stirrer and allow a small current to flow through the solution so that the sample to be stripped is the anode. Increase the current slowly until the nickel becomes passive. The passive point will be indicated by a marked decrease in the current flow accompanied by a marked increase in the voltage. This point is important and will be indicated clearly by the meters if they are watched closely.

Reverse the current for about 30 seconds, at a density of current sufficient to evolve hydrogen on the nickel surface to remove the passive condition. The current is again started to flow (so that the sample is the anode) starting at a low current density and increasing to about two-thirds of the current density required to cause passivity in the first trial. Allow the current to flow until the nickel becomes passive again; this will be indicated by the meters as before.

Process Is Repeated

When the nickel becomes passive again, remove the condition by reversing the current as before, for 30 seconds. Repeat the process (sample as anode) at two-thirds of the current density required to cause passivity in the second trial. This procedure is continued, cutting the current density one third each time, until the current density required to cause passivity falls below 12 milliamperes per square inch. Then reduce the voltage to 2 volts and continue the process until the sample becomes passive at a current density of approximately 2 milliamperes per square inch. This current density can be regarded as the "end-point."

The sample is then removed from the bath, washed with water, dried and weighed. Divide the loss in weight by the area of the stripped surface and compute the average coating in milligrams per square inch.

The solution used is, of course, extremely poisonous, but every plating room uses cyanide solutions and all concerned are acquainted with the precautions necessary. It must be

stressed that accurate weighing is vital to all determinations and samples should be weighed to four decimal places (i. e. 17.8603 grams). Samples weighing over 100 grams need be weighed to only three decimal places.

DETERMINING COMPOSITE COATINGS

When copper and nickel are plated in succession over steel the process of determining the weights of the coatings becomes a bit complicated and requires more time and skill. It is urgently advised that a chemist be called in to "break in" a man to use this procedure; the terms used in the outline of this method are necessarily technical, and a chemist or a druggist will be required to interpret some points.

Stripping

The part to be stripped shall be submerged in cold concentrated nitric acid (specific gravity 1.41 to 1.42) and allowed to stand in a bath maintained at 15 to 20 degrees Cent. until a visual examination reveals that the part is completely stripped. This usually will require from 8-16 hours depending upon the weight and type of metal coating being stripped.

When the sample is removed from the bath for visual examination or at the end of the process, it should be washed with a small amount of concentrated nitric acid and then quickly with distilled water, adding all the washings to the original stripping bath. This point is important; care must be taken that none of the solution is lost.

The solution then should be evaporated nearly to dryness to destroy most of the nitric acid. Dilute the evaporated solution to approximately 100 cubic centimeters with distilled water. The solution is now ready for analysis and extreme care should be taken that all of it is used in the analysis.

Determination of Copper

Add 10 cubic centimeters of concentrated sulphuric acid (specific gravity 1.84) and 5 cubic centimeters of concentrated nitric acid (specific gravity 1.41 to 1.42) to the entire solution containing the stripped coating. Electrolyze the solution to deposit the copper on a weighed platinum electrode, observing the following conditions:

1. Current intensity, 2-3 amperes*
2. Electrode tension, 2.2-2.3 volts
3. Temperature, 20-30 degrees Cent.

When the solution has become colorless, raise the level of the solution slightly by adding distilled water or by raising the beaker. The fresh platinum surface thus immersed will show whether or not copper still remains in the solution. When all the copper has been deposited lower the beaker from the electrodes, with the current still flowing, and at the same time rinse off the adhering acid solution with a fine stream of distilled water from a washing bottle, using extreme care that all the washings are caught in the beaker.

Immediately replace the beaker with one of distilled water and shut off the flow of current. Remove the cathode and wash off the water with alcohol. Allow to drain a moment and then dry in an electric oven maintained at about 100 degrees Cent. Cool to room temperature and weigh. Divide the weight of copper found in milligrams by the area of the sample in square inches to obtain the weight of copper coating in m.s.i.

Determination of Nickel

Add one gram of tartaric acid to the solution from which the copper has been removed, and then add ammonium hydroxide until the solution becomes alkaline to litmus. If a red precipitate appears at this point, add nitric acid, with stirring, until the precipitate has disappeared and add another gram of tartaric acid. Repeat this process until no red precipitate appears when the solution is made alkaline with ammonia. Add acetic acid to the solution until it just becomes acid (with litmus) and heat to boiling.

To the hot solution add about 200

(*Please turn to Page* 69)

*This figure is based on the use of a standard platinum mesh cathode of approximately 100 square centimeters area. It is recommended that a rotary anode or some other mechanical stirring device be used in the electrolysis.

Clean Surfaces With Centrifugally Thrown Abrasive

SUPERIOR cleaning of castings, forgings, stampings and other metal parts is accomplished at low cost with the aid of the recently developed Wheelabrator of the American Foundry Equipment Co., Mishawaka, Ind., according to a survey of the more than 150 such units now installed and in operation. Above photographs show typical forgings and a group of furnace castings cleaned by this method. A stove foundry reports that with this method it has been able to reduce its cleaning cost prior to enameling from $12.14 to $5.50 per ton. Forgings similar to those shown are being descaled by this method at a cost, not including overhead, of $0.954 per ton. With the Wheelabrator the cleaning is done by sand or shot, but without employing compressed air. The abrasive is thrown by centrifugal or tangential force against the work, the stream being controlled by a patented device. The abrasive is cleaned and used over and over again

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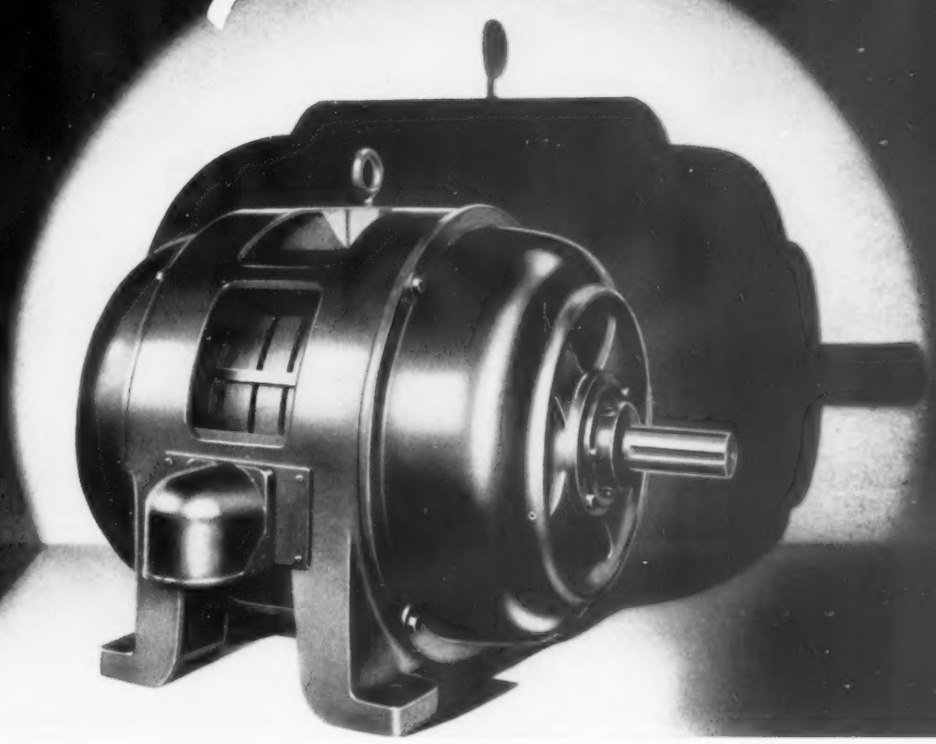

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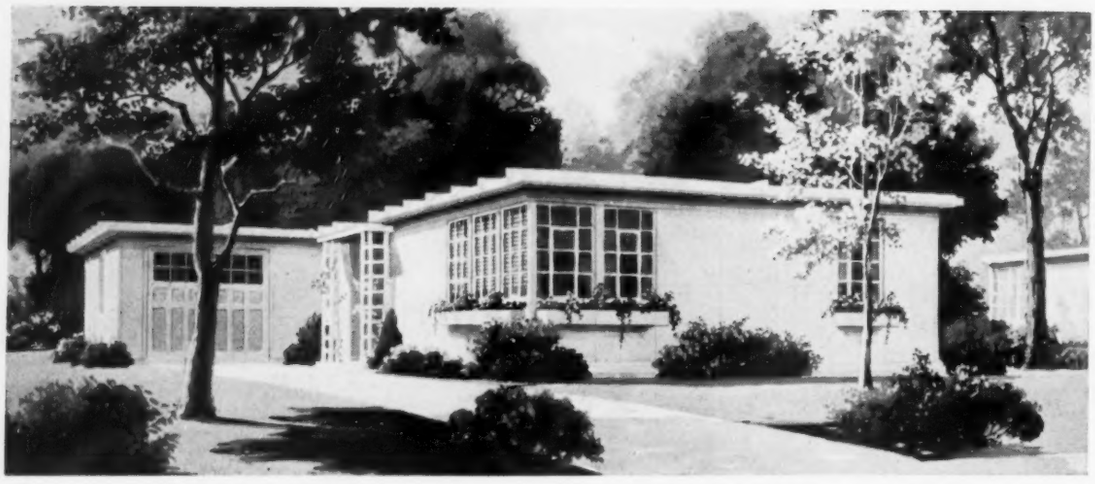


This prefabricated house, designed to sell in the price range from $2500 to $4900, erected and equipped, utilizes a steel frame and walls of asbestos-cement and plywood panels with aluminum foil insulation. Steel also is used for the roof, interior trim, door and window frames, and screens

Prefabricates Houses for Low-Price Field

A NEW type of prefabricated dwelling, designed to sell in the price range between $2500 and $4900, erected and equipped, and utilizing a variety of materials but making major use of steel for the frame and interior trim, is announced by General Houses Inc., Chicago, a pioneer in the steel panel house field. The new dwelling supplements the steel house, which the company will continue to design and sell, and, as it is priced for the mass market, its progress will be watched with interest.

One of the new units is shown in the accompanying illustration. The frame is of copper-bearing steel columns and beams. Exterior walls are made of prefabricated asbestos-cement and plywood panels with built-in aluminum foil insulation; interior partitions are made up of prefabricated plywood panels and copper-bearing steel studs. The house is believed to be the most completely prefabricated product of its kind on the market today, all the materials except those for the concrete work coming to the site ready for assembly.

Columns of the frame are bolted to a sill angle in the concrete foundation. Wall panels are fastened to the frame with joint strips. The house is built to withstand a wind of 90 miles an hour. Tests have shown that the insulated panel walls and ceilings give unusually high resistance to heat and cold. Interior partitions are treated acoustically to reduce the transmission of sound.

The finished roof consists of prefabricated panels of galvanized copper-bearing steel with joints sealed with steel flashing. All wall joints throughout the house are made tight and all through metallic contacts between the exterior and interior surfaces have been broken. Door frames, trim for doors and windows, and the base mold are of steel and steel outswinging casement windows and interior hinged steel screens are used

Layout of Rooms

Built on one level without basement, the house comprises an entry hall, living room, kitchen, two bedrooms, bathroom, utility storage room and a one-car attached garage. It is equipped with practically everything for immediate occupancy except furniture. The sale price includes an oil-fired, warm air heating system; winter air conditioning equipment; complete bathroom with all accessories; kitchen cabinets; double-compartment laundry tub; porcelain enamel sink; all interior and exterior painting; wiring; water, gas and sewer piping within the house; oil-fired hot water heater; and a 220-gallon oil storage tank.

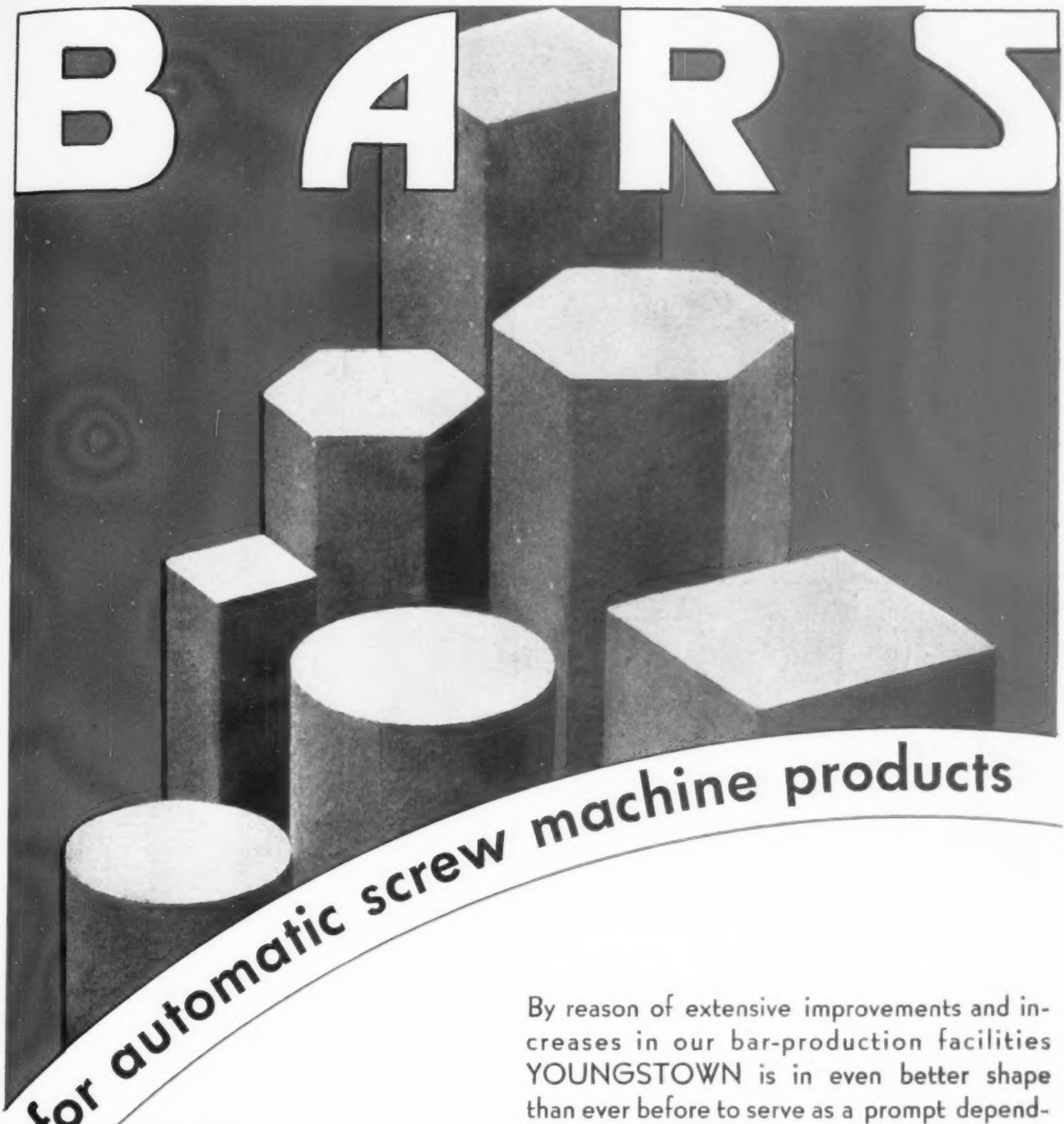
General Houses Inc. is now developing a nation-wide system of dealer-distributors to handle the new product. More than 40 dealers already have been selected; applications have been received from all parts of the United States and from foreign lands as well, Howard T. Fisher, announced. Since the company was organized, slightly more than three years ago, it has designed and erected steel panel houses for occupancy in more than 30 communities.

Arrangements have been made with sources supplying the materials for the new houses to deliver sufficient parts for at least 1000 during the first year. The dwellings will be erected by local labor, no specially trained crews being necessary. All materials except those for the concrete work will be purchased through the company.

Clogging of Burner Prevented by Valve

A new type oil valve that is said to prevent too rapid a flow of heavy fuel oil or tar into the burner, clogging it, and a gas burner which prevents the flames from making direct contact with the container are being manufactured by the Davison Combustion Co., Pittsburgh, Pa. A V-shaped opening for the outlet permits a steady, even flow of oil. The valve is especially suited for installation on furnaces having oil feed pipes of $\frac{3}{4}$-inch diameter or less. The gas burner directs the flame to the bottom of the combustion chamber, creating a high reflecting heat to the container, reducing damage from direct flame contact and also saving fuel.

BARS



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Control instruments are set on a specially mounted board close to the furnace and in full sight of the hammer crew

GAS-FIRED FORGING FURNACES

Research Combines Metallurgical and Heating Values of Fuel in Four Converted Furnaces

BY W. G. GUDE
Associate Editor, STEEL

•

IMPROVEMENT in quality of the finished product, coupled with a decreased scale loss is reported, following the installation of completely controlled gas-fired furnaces for forging of tool steels at the Chicago Heights, Ill., plant of the Columbia Tool Steel Co.

Following the first installation, three additional furnaces have been converted to gas firing, and complete conversion of the plant to the use of gas is in prospect as a result of the successful operation of these furnaces. The installations were made by Mahr Mfg. Co., Minneapolis, under the direction of Robert G. Guthrie, chief metallurgist for the Peoples Gas Light & Coke Co., Chicago, in whose laboratory the preliminary research leading to the installation was conducted.

Success of the installation is attributed to a new conception of gas, involving recognition of the fact that gas is a valuable metallurgical chemical in addition to being a source of heat. Mr. Guthrie and his associate, Dr. Oscar J. Wilbor, have been engaged in research of this nature for a number of years, and the new installation is the practical result of their research.

Gas has been used, with varying success, at different times during the past 50 years as a fuel for forging furnaces. As a fuel alone, it showed some superiority over other types, due to its greater ease of control, but it was not until the problem was approached from the present angle that the full advantages of gas were realized.

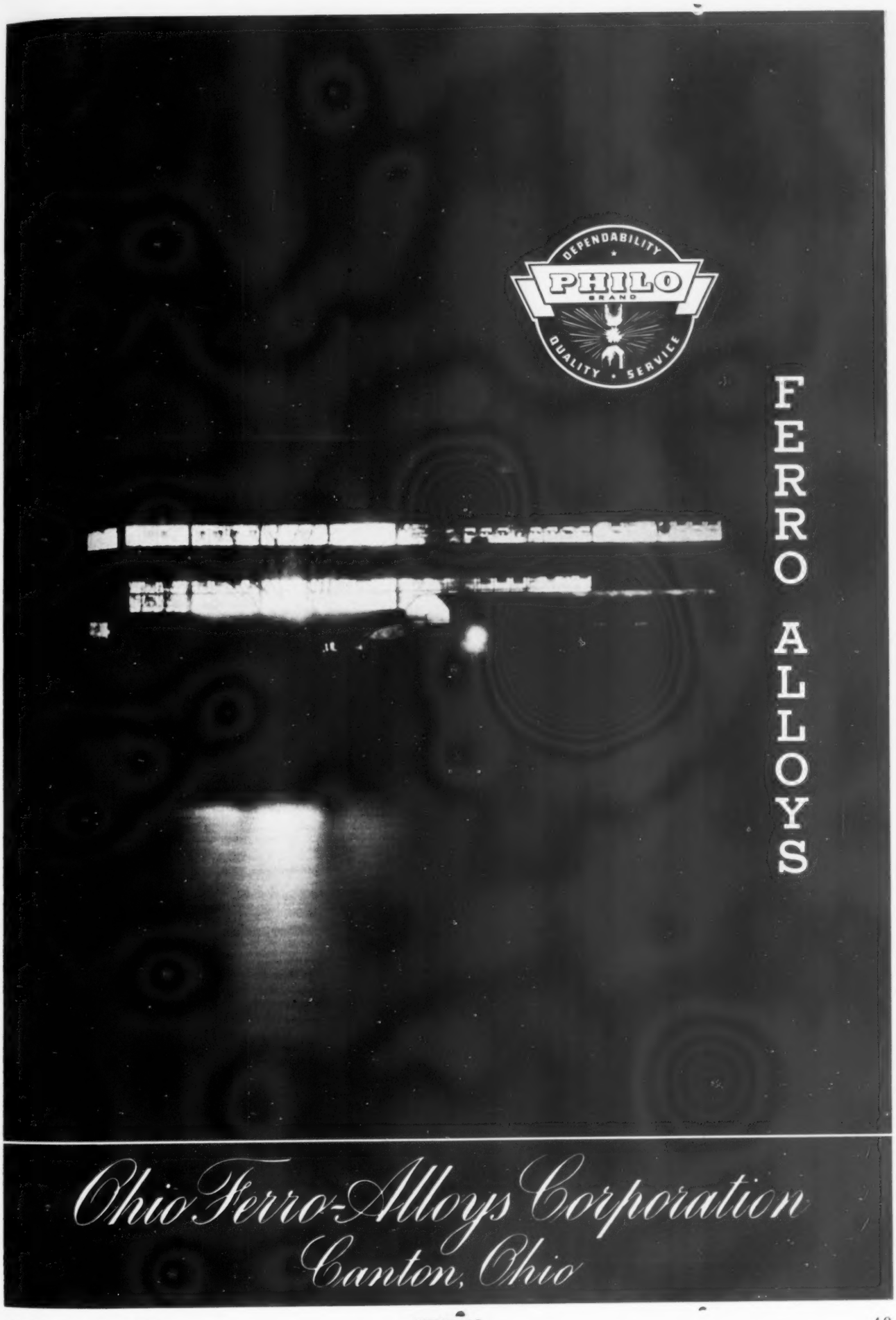
The Columbia installation now involves the conversion to gas firing of four furnaces with hearths up to 16 feet in length and 7 feet in depth, with loading capacities up to 20,000 pounds per charge. The work of conversion was not exceedingly complicated.

Insides of the furnaces were redesigned and rebricked in order to give satisfactory dimensions and conditions for gas firing. Flue vents were installed in place of stacks, and fireboxes were bricked over.

Each furnace was equipped with three Mahr low-pressure sealed-in burners of special design, each burner having a capacity of 2100 cubic feet of 1000 B.t.u. natural gas per hour and mounted in a specially constructed and proportioned combustion chamber. Air is supplied by individual blowers on each furnace.

Of special interest is the fact that the control attempted required that each furnace be equipped with two-position gas and air mechanical positive proportioning valves, with mechanical linkage and electrical operation. For this purpose a motor-operated valve was found best suited.

Interest in the installation, however, is centered about the controls provided. In contrast to traditional practice, the control instruments are set on a especially mounted control board close to the furnace and in full sight of the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hammer crew, instead of being mounted in some other part of the plant on a central control board.

The controls themselves are original, and it is on the theory of perfect control that the success of the Columbia installation is based.

In addition to the usual recording temperature controller, the controls include gas and air regulating valves, a continuous gas analysis recorder for each furnace, accurate furnace pressure gages, and gas pressure regulators.

An interesting feature of the arrangement is that the crew foreman himself determines the heating program for any given charge. A slate is provided on which he lays out the 24-hour program. A typical program, for instance, is as follows: 11 p.m., temperature 1450 degrees; 3 a.m., temperature 1950 degrees; 5 a.m., temperature 2300 degrees, against a work starting point of 2300 degrees.

At the hours designated, the night men set the temperature on the recording temperature controllers, and the hammer foreman can satisfy himself, by a glance at the recorder, that his program has been followed and that the material is ready for working.

This practice not only assures accurate temperature control, but makes possible a controlled heating rate, with definite starting and finishing maximum and minimum temperatures.

Controlled heating thus assures that the work will be ready for the hammer crew in the best condition for forging, but the controlled atmosphere of the furnace plays an even more important role, in assuring the quality of the finished work. By controlling the furnace atmosphere, decarburization of the surface has been reduced 66 2/3 per cent, and scaling has been reduced 75 per cent, the scale that comes off at the first hammer-blows being paper-thin, and thus improving recovery in salable weight. Previous losses, from ingots to finished bars, had run as high as 9.4 per cent.

Another important advantage lies in the uniformity of the product from heat to heat, day to day, season to season, and year to year consequent upon the controlled atmospheres of the new furnaces.

High Positive Pressure

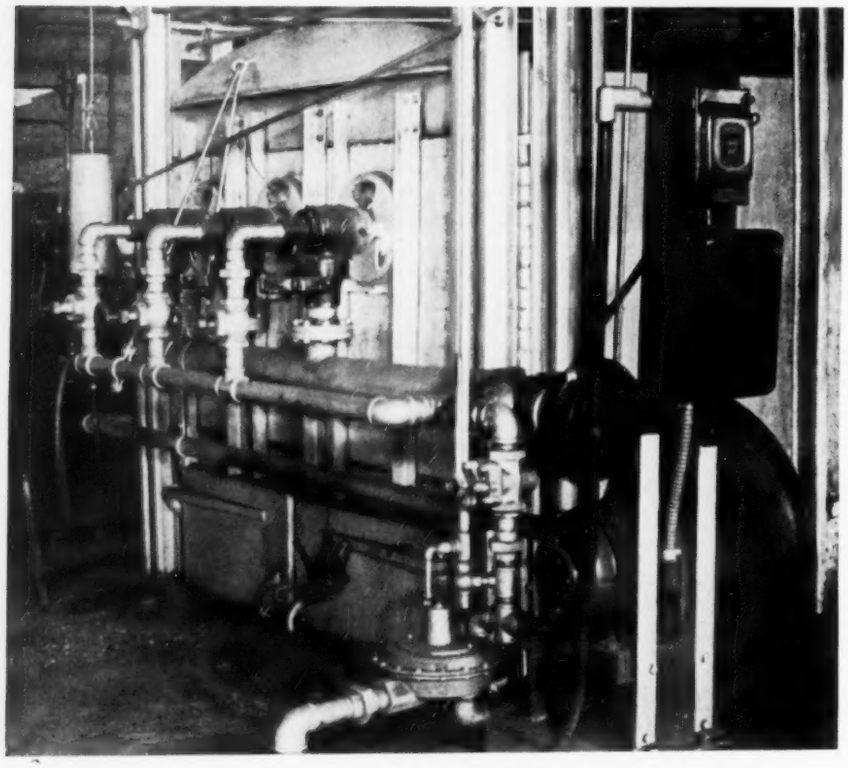
Thus, the fact that there is no stack in connection with the furnaces, and therefore no inflow draft around furnace doors, makes for uniformity of the product, and uniform heating of the billets. Actually, one of the most important features of the entire design, the feature which makes possible all the control and uniformity, is the use of a relatively high positive furnace pressure. This condition makes the operation of the furnace entirely independent of outside weather conditions, which are often annoying in the operation of furnaces which depend upon stack draft in their operation.

Because of this positive pressure, a curtain of air is provided by blowers which direct a thin sheet of air upward in front of the furnace doors, to protect the workmen.

Among the collateral advantages following the conversion to gas firing are smoke elimination, much greater cleanliness, and improved working conditions for the hammer crew.

Firing speed has been increased 500 per cent, which is an important item, and all danger of overheating the work has been removed. Underheating of work also has been eliminated. The thermal efficiency of the furnaces has been increased approximately 50 per cent by elimination of stack and infiltration losses.

An additional advantage and economy, it is pointed out, would result in a new installation of gas-fired furnaces since the cost of erecting and maintaining a smoke stack is entirely eliminated. Other economies result from savings in fuel handling costs.



Each furnace is equipped with three low-pressure sealed-in burners

Show Reflects Progress in Heating and Ventilating

Further improvement in the design and finishing of sheet metal parts was apparent among the exhibits at the fourth International Heating and Ventilating exposition, held at the new International amphitheater, Chicago, Jan. 27-31. The more than 300 exhibitors represented constituted a record. More than 1000 registered for the annual sessions of the American Society of Heating and Ventilating Engineers, sponsor of the exposition.

Influence of the development of air-conditioning equipment was apparent in the increase in number of exhibitors at the exposition. Air conditioning systems for skyscrapers down to bungalows were in operation, with emphasis placed on the fact that small units now have been priced within reach of the ordinary home owner. A variety of gas, oil and coal-fired heating equipment also was displayed.

Appearance of both heating and ventilating appliances has been influenced markedly by the industrial stylist, with pleasing lines and colors predominating. Steel sheets are used widely for exterior parts.

Various steel companies were represented among the exhibitors. These included the American Rolling Mill Co., Bethlehem Steel Co., Jones & Laughlin Steel Corp., Republic Steel Corp., United States Steel Corp. and Youngstown Sheet & Tube Co.

A feature of the meeting of the society was the awarding of the F. Paul Anderson gold medal to Dr. Arthur Cutts Willard, president, University of Illinois, Urbana, Ill. This medal was presented for distinguished scientific achievements in the field of heating, ventilating and air conditioning. The National Warm Air Heating and Air Conditioning associaton held its annual convention Jan. 29-30, and co-operated in conducting the exposition.

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Methods and Materials

Automatic Machine Molds, Tamps 1920 Brick Per Hour

A novel type of machine for the continuous manufacture of brick has been designed and is being manufactured and marketed by the W. E. Dunn Mfg. Co., Holland, Mich. It is entirely automatic in operation, requiring only one man to remove the finished product. The machine is timed to deliver 1920 finished brick per hour.

The machine is assembled on a fabricated frame of electrically welded steel angles and channels. Bricks are formed in a continuous belt of steel mold box compartments. This belt passes under a hopper from which the material is fed to the mold boxes which pass under a graduated packer head which consists of a series of tamper and trowel arms. This tamping and troweling mechanism is provided with specially designed roller bearings, each one with a dustproof cover and an extra large grease reservoir.

The machine is operated by a 2-horsepower motor, transmitting its power through an automotive-type disk clutch connected directly to the belt pulley. Driven directly from the pulley shaft is the worm gear drive running in an oil bath dustproof gear housing. The continuous chain of mold boxes is driven by spiral tooth, beveled gears of nickel steel. These gears are directly driven from the worm gear shaft.

S S S

Novel Inspection Promotes Better Plant Housekeeping

More attention is being paid to better housekeeping in industrial plants to the end that it promotes the health and safety of workmen. Various schemes are employed to encourage neatness and tidiness. A plant in Michigan has a man who walks through the plant once a day carrying a tin can equipped with a perforated top and containing a powder of obnoxious yellow color. When he finds conditions which do not comply with the requirements of good housekeeping, he sprinkles the powder generously on the particular spot.

When the foreman comes along and finds this, he proceeds immediately to remove whatever caused the display. The general manager of this company also has the habit of walking through the plant and if he happens to see the yellow calcine powder, he makes it a point to discuss it with the foreman. Naturally, the foreman likes to avoid these personal talks, especially if he is charged with supervision in connection with better housekeeping.

S S S

Foundry Tumbling Barrels May Be a Dust Hazard

Tumbling barrels in foundries cause some concern in connection with the dust hazard. It is likely that this problem might be solved by paying more attention to reducing milling time. For instance, many times after a mill is loaded with castings, stars are shoveled up from the floor and with them accumulated sand spilled from previous milling. Sometimes, old shoes, leather mitts and pieces of wood are added to this mass.

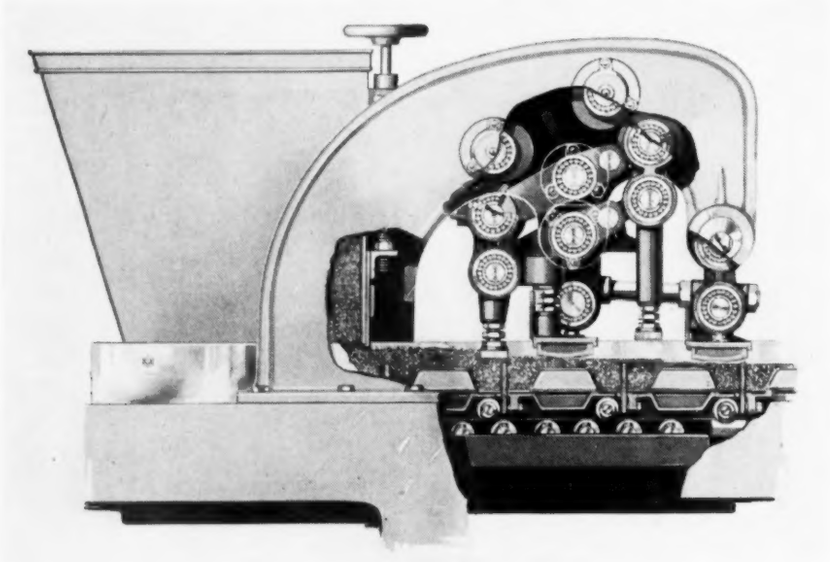
When it is considered how a tumbling barrel ordinarily is ventilated, it must be realized what exhaust systems are called upon to do. Traps usually are provided and it is important that they be kept in repair so that they may perform the service for which they are intended. Frequently the trap trips are found to be so loaded with weights that it is impossible for the trap to trip when it has reached its limit of capacity. When these trap trips are overloaded, it lets the material work up to the felt washers and eventually into the mill bearings.

S S S

Will Produce All-Steel Refrigerator Cabinet

As a result of hot room, rigidity and other tests of its newly designed all-steel cabinet for electrical refrigeration, shown in the illustration on Page 55, the Midwest Stamping & Enameling Co., Morrison, Ill., has made preparations for placing this cabinet in production. Among its interesting features is the fact that it has a steel frame as well as steel exterior and interior. Work on the dies for the steel frame have been completed.

The company has installed considerable new equipment, notably two



Cutaway view of automatic brick forming machine, showing roller bearings on tamping and troweling mechanism

125-foot continuous, conveyor type ovens, capable of maintaining temperatures between 300 and 400 degrees Fahr. The company now is equipped to finish in high-bake, synthetic enamels as well as in porcelain enamel. Contracts have been booked for approximately 25,000 of the new cabinets for delivery over the coming season, covering the first

This new turret top electric refrigerator cabinet has a steel frame as well as steel exterior and interior

half of 1936. In addition the company has booked several large porcelain enameling contracts. S. S. Battles, formerly chief engineer in charge of development work for the Ingersoll Steel & Disc Co. division of Borg-Warner Corp., Chicago, is president and treasurer of the Midwest Stamping & Enameling Co.

S S S

Stainless Steel in New Ice Breaker

Stainless steel is utilized for the shaft and blades of a new type ice breaker for use in individual drinking glasses. All other parts of the breaker, fabricated by the North Bros. Co., Philadelphia, are of chromium plated brass. For breaking ice cubes on a larger scale than in a glass, this company manufactures a breaker with a die-cast aluminum hopper. The breaker has bronze bearings and a new type chromium plated crank.

Welding, etc. . . .

by Robert E. Kinkead

IN THIS column, the author, well-known consulting engineer in welding, is given wide latitude in presenting his views. They do not necessarily coincide with those of the editors of STEEL.

The Smartest Job

A YOUNG engineer whom we regard highly, reacted violently to our assertion that real selling consisted of selling a man something he does not want at a price he cannot afford to pay. It seems to us that selling and merchandising are two different things. The thousands of 5 and 10-cent stores in this country merchandise their goods. You could stay in their stores a week and no one would try to sell you anything. They lay it on the counter and you can take it or leave it. It is their responsibility to put the goods on the counter that you want at a price you can afford to pay.

The smartest job in the welding business is being done by the people who are trying to merchandise what their customers want at a price they can afford to pay. High-power selling is no longer a dominant factor.

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Welding Symposium

Published by The Iron and Steel Institute of London, and available through the Penton Publishing Co., a symposium of some 150 papers on welding constitutes a necessary part of any library on welding. Eleven dollars is a small price to pay for two volumes of such information.

The collection is not a textbook. It represents what several hundred experienced engineers and production men say about their experience in the papers presented. Some of the text of the papers is windy; some of it over-technical, but all of it is valuable if one is to know what is going on in the world with reference to welding. The authors are not exclusively British, a number of other countries being represented, including the United States.

The naive style of British technical writers and speakers is pleasing to most American engineers. When American engineers have a new technical baby and write about it, they are fervent, sure they are right, and convey the impression that they are ready to fight it out with anyone who questions their conclusions. The British engineers, on the other hand, are most becomingly modest about their conclusions and are likely to introduce charming bits of humor on their struggles to solve difficult problems. British technical publications are always good reading matter.

• • •

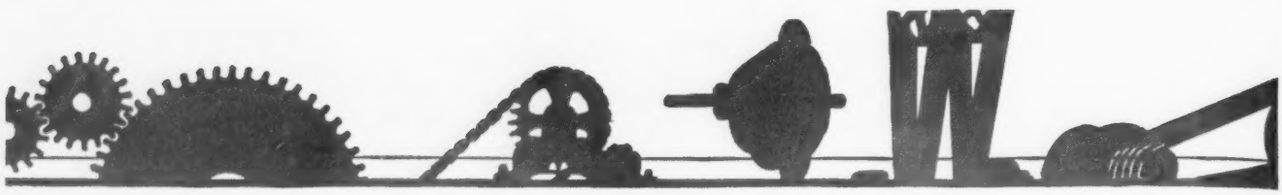
Sparks and Flashes

A new torch cutting machine developed by a St. Louis pipe fitting manufacturer will automatically bevel pipe ends, cut and bevel openings in pipe for fittings. Angles and dimensions are held by the machine to almost unbelievable close tolerances. Gentlemen who went in for descriptive geometry in their engineering courses will recognize, in this machine, a method of solving difficult problems by a method that is almost as simple as pushing a button and waiting three minutes for the answer.

• • •

Success in management of a welding department begins when continuous records of costs are kept. The base cost should include a figure which takes into account service behavior in the field. Well managed welding departments show two decided trends at the present time. Wage rates are going up; base costs are going down. The time has long since passed when the welding department may safely exhibit "prima donna" tendencies with reference to incentive systems and reduction in base costs. There is no practical way in which both men and company can earn more except by producing more effectively. If management fails to accomplish this end, management needs some help.

Power Drives



Operating Efficiency

USUALLY in the purchase of an electric motor considerable attention is given to its rated efficiency, as stated by the manufacturer. This figure, incidentally, is the efficiency at full load.

It is not so common, however, for the user as close consideration to the efficiency during operation, which at half load is considerably less than at full load. Many drivers are underloaded even during the periods of full production. With group driven installations this is seldom necessary. On individual drives using standard motors, which are engaged continuously on one item of production, a careful study of the load cycle often will permit the installation of a motor of lower horsepower rating than originally specified by the machine tool manufacturer, thus permitting a better load factor and therefore higher operating efficiency.

Where special motors are necessary, and therefore less easily and economically interchanged, the installation of motors of lower rating than recommended by the manufacturer of the machine is seldom advisable except where the machine never will be loaded more heavily.

A careful study of load conditions on both group and individual drives often indicates possible changes, either in motors or machines, which pay handsome dividends in reduced power consumption and in savings in power factor penalty, where imposed. Such studies are not expensive as they can be made with a portable ammeter. Recording meters, however, are more effective and, when a number of motors are operated, will practically always more than pay for themselves by disclosing improper loading conditions or opportunities for power savings.

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Bonded Bearings

SOME time ago an Eastern automobile dealer created considerable interest by announcing that he would bond against trouble and replace free of all expense all bearings on every new car sold for 20,000 miles operation, provided it was brought to him for lubrication and oil change every 1000 miles. Automotive bearings should be trouble-free "provided" they receive the proper servicing and lubricant.

The same is true of industrial bearings "provided" they, too, receive the proper attention and lubricant on regular systematic schedules. Frequently on old type equipment some provision must be made to apply the oil or grease through automatic or mechanical means, such as bottle or wick oilers, pressure or automatic feeding, or some other device, inexpensive compared to its advantages. The oil can and open oil hole are not sufficient, particularly in the plant which desires to "bond" itself against trouble.

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Oilcan and open oil-hole lubrication is not only wasteful but also is seldom efficient. Oil holes are a clear path for dust and metal turnings to enter the bearings.

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It is easy to supply horsepower and manpower to a machine but it requires brainpower to operate it effectively and service it properly.

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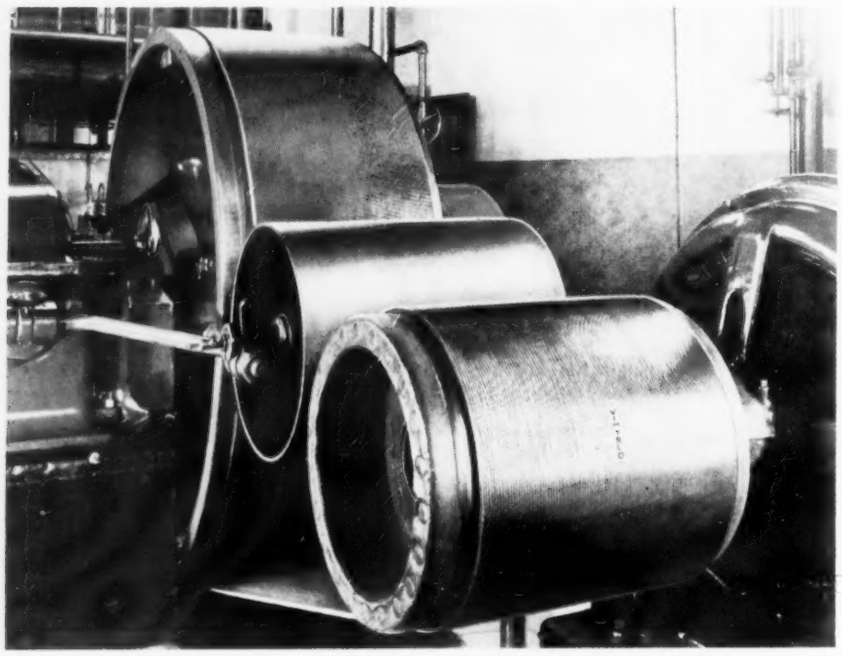
Wherever there is trouble there is a cause. Trouble is only the effect. Before trying to apply the remedy, first find the cause.

Heavy-Duty Belt Service



THE BELT GOES DOWN AND AROUND, making about 400 flexures per minute—two bends forward and one in reverse—as it delivers 250 horsepower at 4900 feet per minute on this compressor drive. Slippage and flexures rapidly wear out belts not designed to meet these demands. Here slippage is reduced to a minimum by the special tread or driving surface with a high coefficient of friction. Also, the high pliability of the special tannage leather permits the belt fibers to flex and readjust themselves as they rapidly bend backward and forward around the pulleys. This 26-inch double Vim Tred belt connects 26-inch motor and idler pulleys to a 96-inch compressor pulley on 8-foot centers. The belt was Manufactured by E. F. Houghton & Co., Philadelphia

UNITED AGAIN!

CRAMP'S *Super-Strength* BRONZE AND UNITED'S ENGINEERING SKILL

Cramp's Super-Strength Bronze was specified by the Engineering Department of the United Engineering and Foundry Company for the Screw Down Nuts and Worm Gears in this, another of United's outstanding installations.

Finishing mill which includes five 21 and 16 x 36-inch stands of 4-high rolls and delivers at a maximum speed of 1500 feet per minute

Roughing mill which comprises one stand of 2-high and two stands of 4-high rolls. Each of these stands is preceded by edging rolls

Approximately 180,000 pounds of Cramp's Super-Strength Bronze castings were delivered for use in this complete unit.

Tensile strength in excess of 100,000 pounds per square inch—yield point 60,000 pounds—Brinnel Hardness 200—and a readily machinable metal is obtainable with Cramp's Super-Strength Bronze.

"*Super-Strength*" — THE STRONGEST BRONZE

Copy of our Super-Strengh Bronze Folder will be forwarded on request.

CRAMP BRASS and IRON FOUNDRIES CO.

Paschall Station - Philadelphia, Pa.

NEW YORK CLEVELAND PITTSBURGH MILWAUKEE SAN FRANCISCO

Progress in Steelmaking

Rig for Operating Blast Furnace Bell Reduces Weight on Top Structure

DEVELOPMENT of large hearth blast furnaces in recent years has necessitated the installation of a heavy large bell, bell beam and large bell counterweight, thus imposing considerable weight on the top structure of the stack. In one or two instances during the blow-in period explosions have occurred in the gas seal resulting in the big bell being kicked open and the beam and counterweight being tossed in the air. The bell returning to its closed position unimpeded frequently resulted in snapping the bell beam or bell rod connection and in the hazard of the counterweights penetrating the platform and falling to the ground.

Recently, however, the large bell operating mechanism has been improved. As shown by the accompanying design the big bell beam has been eliminated, thus obviating the use of the numerous big bell counterweights on top of the furnace. The bell rod is hung and driven from a heavy sheave wheel and crank shaft which operate directly above, thus providing a straight-line motion to the bell and its rod.

This arrangement simplifies and facilitates centering the bell accurately, reduces the load on the top structure, enhances the factor of safety, affords slow and gradual movement of the bell in opening and closing with fast travel between these operations, provides positive force for opening and closing, and reduces the pull on the hoist cable thus making is possible to employ a smaller size hoist.

A unit of this type, patented by Arthur G. McKee & Co., Cleveland, recently was installed on one of the stacks of the Great Lakes Steel Corp., Detroit.

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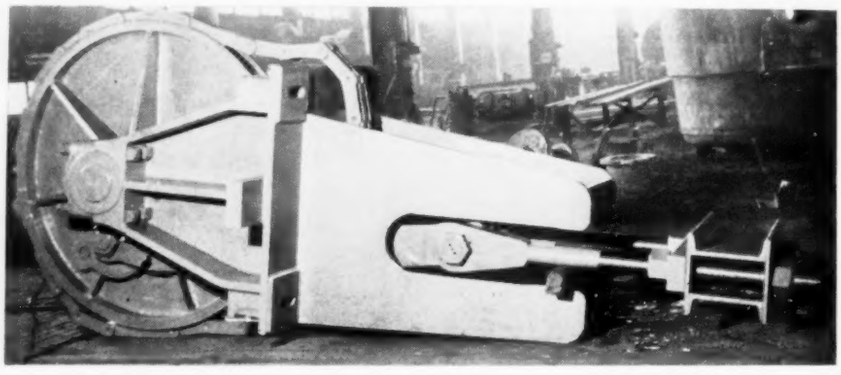
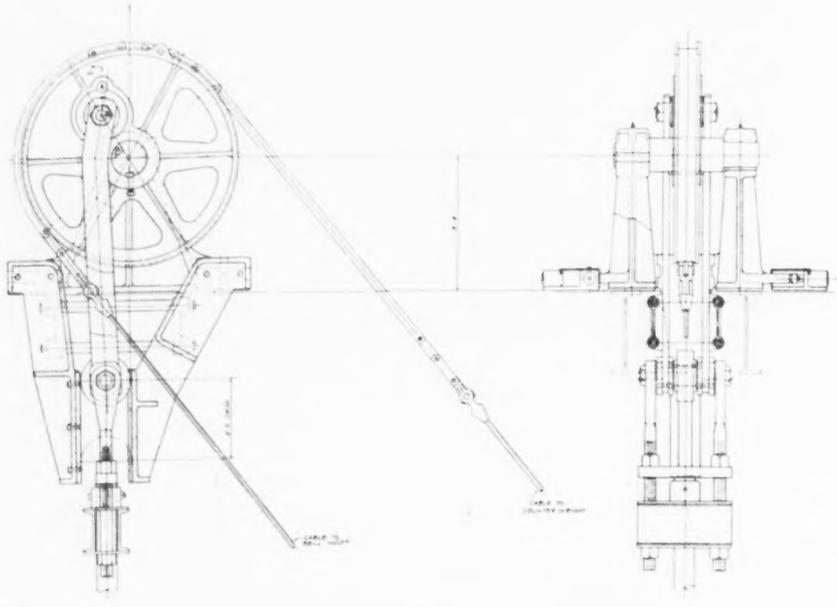
Recommends Thin Coating

Red lead as a prime coat for the protection of iron and steel should be applied thin enough to wet the entire surface as well as any depres-





Above — View of newly developed mechanism for operating big bells of blast furnaces assembled ready for shipment

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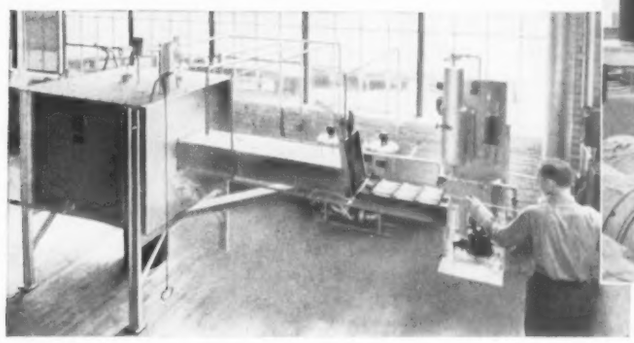
Left—Elevation and plan view of big bell rig showing sheave, heavy link chain and hoist and counterweight cables

FROM ANNEALING 8-TON COILS OF STEEL STRIP TO BRAZING CASH-REGISTER PARTS . . .

G-E FURNACES

Give You High Quality at Low Cost

This bell-type furnace in the Ford Motor Company's River Rouge plant is the largest of its kind yet constructed. It bright-anneals two 16,000-pound coils of steel strip per charge



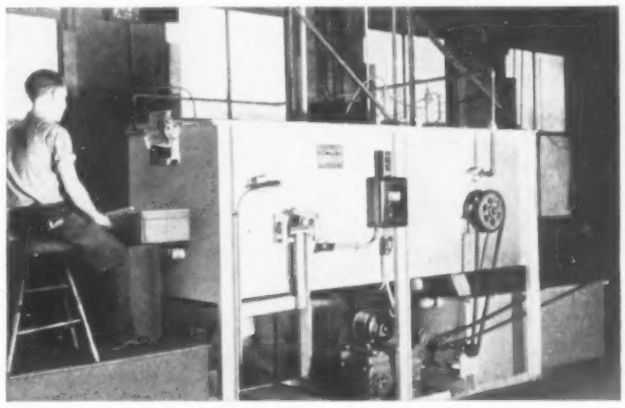
If your product has small parts which are now riveted, pinned, torch-brazed, or machined from solid stock, investigate G-E electric-furnace brazing

IN the new steel mill at its River Rouge plant, the Ford Motor Company has fourteen G-E controlled-atmosphere bell-type annealing furnaces—a significant indication of the modern trend toward the use of electric furnaces for high-quality heat treatment.

The benefits of electric bright-annealing, electric-furnace brazing, and scale-free hardening are readily available to you, too, through General Electric's complete line of furnaces.

Greater uniformity, fewer rejects, and higher-quality product are assured by uniform distribution of heat and by automatic control of temperature and atmosphere in the G-E electric furnace. Maintenance costs on G-E furnaces are exceptionally low because of the low temperature differential between the ribbon resistors and the charge.

A heating specialist from our nearest sales office will be glad to give you complete information on the application of G-E electric furnaces to your processes. General Electric, Schenectady, N. Y.



For scale-free hardening or bright-annealing, a G-E continuous, controlled-atmosphere furnace like this will give you uniform, high-quality results at low cost

YOUR EVERY NEED IN ELECTRIC FURNACES FROM ONE MANUFACTURER

170-33

GENERAL ELECTRIC

sions and cracks, according to an authority on corrosion. A large proportion of the pigment should be used for the outer coating, which under atmospheric conditions, should be designed for the exclusion of moisture and water. A coating containing 2 pounds of flaked aluminum per gallon of spar varnish affords satisfactory service when exposed to the weather.

• • •

Inhibitor Protects Steel

Protection against pitting or loss of steel during the pickling process is had by the use of a newly marketed high-strength inhibitor which is heat resistant far above pickling temperatures and will not break down at 220 degrees Fahr. The inhibitor also may be used with copper sulphate for coprodizing.

• • •

Installs Circular Furnace

A circular soaking pit, 11 feet diameter and 7 feet deep, now is being operated by a steel producer in the Mahoning valley. The furnace is equipped with a circular cover which moves both ways over the pit, thus minimizing the heat losses during the charging and discharging operations. The furnace is fired with a mixture of blast furnace, coke oven and natural gas. Based on 130 tons of ingots heated per 24 hours the fuel requirement amounts to 1,100,000 B.t.u. per gross ton. The pit has a holding capacity of eight 21 x 23-inch slabbing ingots or six 21 x 47-inch ingots of this type.

* * *

Measures Heat of Ingots

Temperature of ingots in the soaking pit now can be measured by a portable type thermotube unit. Approximately 30 seconds is required to check the temperature of a bank of four pits.

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Minimizes Rolling Friction

Friction between strip steel in the process of cold reduction and the work rolls of the mill is being minimized at many plants by the application of a coat of "roll oil." Lubricants of this type form an oil wedge and behave similar to a lubricating oil in the pressure area of a sleeve-type bearing. The roll oil also serves to protect the coiled strip against surface scratches should the coil become loose and unwind.

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Prevents Electric Grounds

Compact pipe ends or insulated bushings made from a special phenolic laminated material have been designed to prevent disastrous grounds in steel plant wiring systems. The fitting is recommended for use on all conduits terminating at switch and control boards, pull boxes, motor starters, controllers, cranes, etc.

1935 Accounted for Comparatively Few Changes in Steelmaking Process

DURING 1935 no radical improvements or changes in the method of producing basic steel ingots were reported to the Open-Hearth Committee of the American Institute of Mining and Metallurgical Engineers, states L. F. Reinartz, works manager, American Rolling Mill Co., Middletown, O. in commenting on the advancement made in steelmaking practice for 1935.

Nevertheless, efforts are being expended continually to decrease cost and improve the quality of the open-hearth product. Shipment of large tonnages of steel scrap to foreign countries has not helped any in the drive for improved quality.

Temperature measurements in the open-hearth operation never have been satisfactory. Considerable progress, continues Mr. Reinartz, has been reported by certain plants where roof temperatures are recorded continuously, and where metal temperatures are read at the end of the spout during the tapping period.

Automatic reversal of valves has improved furnace practice in those plants where this control has been tried.

Some plants have experimented with the use of oxygen and CO_2 recorders for waste gases in order to help maintain proper furnace atmosphere at all times.

Experiments on copper stools are continuing with contradictory results reported. It appears that success or failure depends on the purity of the copper and the grades of steel made. A few plants have achieved good results by the use of "air-cooled" cast-iron stools.

During recent years, refractory brick manufacturers have placed on the market many new high-priced basic refractory brick. If they render the proper service, the cost is not exorbitant. If not, they waste the steel man's money. The future will tell the tale. Further improvement in tonnage output must come. The brick manufacturers hold the key to the situation, Mr. Reinartz contends. When better bricks are made, lower cost ingots will be produced.

Resistor-Type of Rocking Furnace Undergoing Tests

Preliminary test and manufacture of a resistor-type rocking furnace is announced by the Detroit Electric Furnace Co., Detroit. This unit is expected to be especially useful for low-temperature melting operations and may have special value in the chemical field.

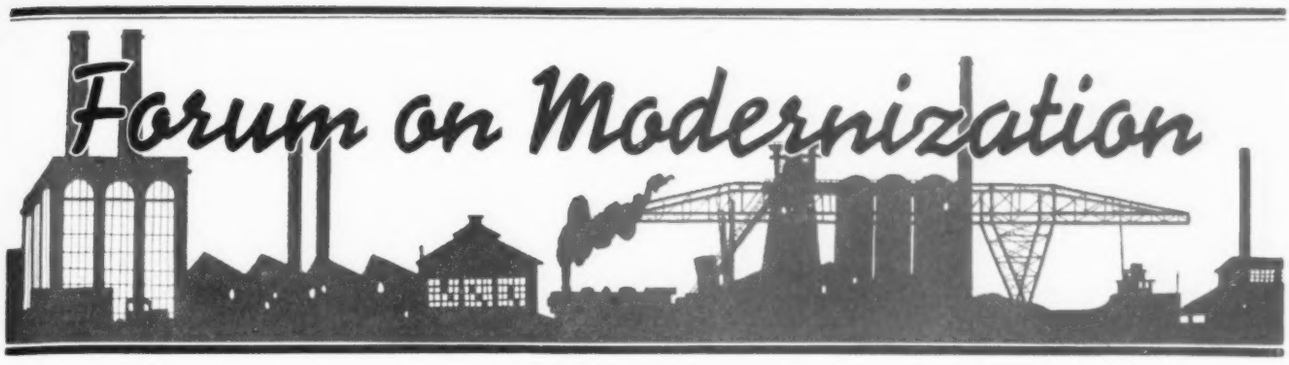
The broad principles of the furnace are old, the rocking mechanism and control being similar to that already used on present-day furnaces built by the company. To the rocking furnace mechanism a resistor element has been adapted by mounting a graphite resistor on the central axis of the furnace and connecting it to a special transformer. It is expected that unusual temperature flexibility and control will be derived by this means.

According to a statement by the company, equipment of this type has been built and is being tested for operating results to evaluate its usefulness in the melting field. If successful, it is expected that units in several sizes will be offered promptly to the United States market.

New Plastic Insulating Cement Placed on Market

Botfield Refractories Co., Philadelphia, has added a new plastic insulating cement to its line in the last few months. Known as Ada-Stic, this product is claimed to provide efficient insulation up to 2000 degrees Fahr., has guaranteed coverage, and is economical to install and maintain. Requiring no other material to give a fine finished surface, it is reclaimable.

The material can be applied by hand, trowel, or the cement spraying equipment marketed by the company. It is said to adhere firmly to any clean surface, is extremely tough, will stand up under hard usage, and can be said to have no shrinkage. Descriptive literature can be obtained by addressing the company's office at Swanson and Clymer streets, Philadelphia.



Reduction by Modern Machinery of "Human Element" in Manufacturing

BY C. J. ZAISER
General Manager, Ampco Metal Inc., Milwaukee

ELIMINATION as near as possible of the "human element" in manufacture is one of the most significant reasons for carrying out a modernization program. Use of modern machinery requiring a minimum of attention by operators removes manufacturing from a somewhat "hit and miss" process to the state of an exacting science.

With older machinery in operation, the quality of the products often depends largely upon the skill of the operators. In these instances the uniformity of the products varies with the skill of the operators. When competition becomes severe, especially in consuming industries laying down rigid and exacting specifications for the producers to meet, the uniformity of the finished products is an important item to consider in figuring profit or loss.

Improvements in machinery have been directed largely to effecting a reduction in operating expenses, stepping up production capacity through more efficient mechanization and to make them more nearly "foolproof" as a protection against improper control.

Quality Is Improved

Installation of modern equipment not only increases the efficiency of the operators, but also enables them to improve the quality of the products being manufactured. Formulas for production, carefully worked out in advance, can be followed more closely than formerly by operators with equipment designed specifically for a certain purpose.

Possible trouble through improper control of furnaces at our plant has been reduced considerably through the installation of safety features. Considerable saving in labor cost has resulted from this installation. These features now facilitate operation of these furnaces through the preheating and preparatory stages.

The use of complete automatic control on all heat treating furnaces also has resulted in further insurance against loss through human variation. A finer product has resulted in the production of a high grade product in heat treatable aluminum bronzes, beryllium copper alloys and improved conductivity of copper alloys.

Centrifugal Casting Equipment

Installation of centrifugal casting equipment has been successful on two main points, both of them opening the way for increased profits. The yield of metal melted was increased from 55 to 80 per cent by the installation of this modern equipment. This method is more economical for large castings than for the sand casting method. This is due to the elimination of unnecessary cutting and grinding costs.

Smaller machines in the production of gear blanks, and the like, in sufficient quantities not only reduce considerably the cost of production, but, at the same time yield a better product. In addition to these features tending to improve the quality of the product at less cost than formerly, the centrifugal process has eliminated to some extent the need for highly specialized training of operators formerly needed by molders. They are replaced by men of mechanical ability, although not necessarily highly skilled.

Adapting old equipment to new needs through redesigning often reduces operating costs and helps in the production of a better product. An improved metal was obtained by redesigning special alloy oil burning furnaces to meet our own specifications.

These furnaces are designed to keep the combustion of gases away from the crucibles, relying upon superheated gases alone to deliver the melting function of the furnaces. The elimination of burning material from the vicinity of the crucible results in less gas absorption by the metal being melted, with the result that beryllium copper and other volatile alloys with similar characteristics are more successfully melted than any other type in production.

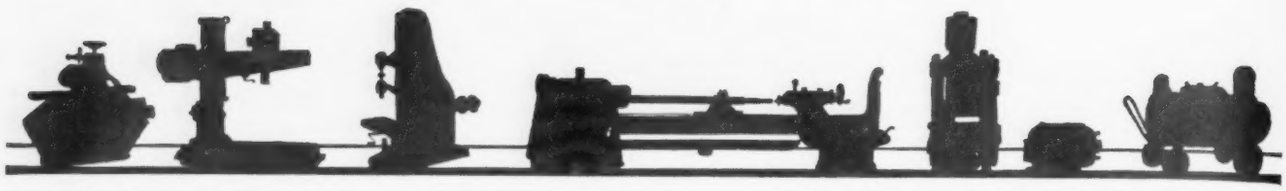
Improvement in machinery brings new methods and features to existing fields and opens up others. The use of automatically controlled melting furnaces for centrifugal casting production is a new feature, particularly with the high-copper alloys. This method has been used in the past by producers of babbit and lead, although naturally at lower temperatures.

Energy Transmitted With Aid of Tin and Its Alloys

D. J. Macnaughtan, director of research of the International Tin Research and Development Council, 149 Broadway, New York, is the author of pamphlets on Tin and Civilization, and Tin and Its Uses, recently issued by the council. Effective transmission of many forms of energy is essential for the maintenance and progress of civilization, Mr. Macnaughtan says. The transmission of food and mental energy with the aid of tin is discussed in the first pamphlet.

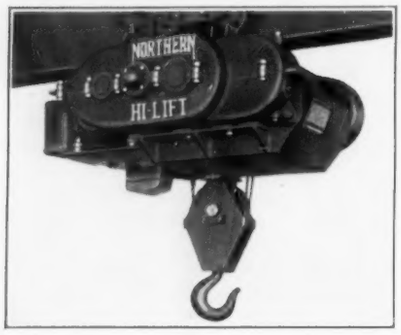
A concise account of the mining of tin, the manufacture of tin alloys and their uses, and the applications of tin and its importance to industry is given in the other pamphlet. Modern industry has increased the demand for the metal from 10,000 tons to 188,000 tons a year in the last century, Mr. Macnaughtan points out. Improved methods of mining by dredging ensure the economic extraction of tin ore even when the concentration in the deposits is low, and scientific control of smelting has improved the quality of the tin produced.

New Equipment



High-Lift Electric Hoists—

Northern Engineering Works, Detroit, is bringing out high-lift electric hoists built especially to serve where heavy-duty is hampered by minimum space. The hoist frame, constructed of



Northern hoist for heavy-duty service

rolled steel shapes, forms a simple rigid structure. Hoist gear case is split horizontally through the bearings to allow inspection and removal of gearing and mechanical brake without draining the oil from the case. An automatic disk type mechanical load brake is provided in the hoist mechanism. An electric motor brake is furnished on the hoist motor. The accompanying illustration depicts this new development in overhead monorail electric hoists.

♦ ♦ ♦

Plugs and Receptacles—

Delta-Star Electric Co., 2400 block, Fulton street, Chicago, has brought out 3-pole 600-volt, 100-ampere plugs and receptacles, shown herewith, for extra heavy duty where conventional units are not well suited. Receptacles are tapped for 2-inch conduit and for smaller sizes a reducing bushing is used. Two, three and four-pole combinations are made.

Delta-Star plug and receptacle

♦ ♦ ♦

Hydraulic Press—

Farrel-Birmingham Co. Inc., Ansonia, Conn., announces a new design of hydraulic press with a self-contained hydraulic power unit. Although the machine, shown herewith, is designed especially for plastic and rubber molding operation, it may be readily adapted to other work. Capacity is 100 tons. Platens are 20 inches square with a

Farrel-Birmingham press embodies modern design principles

12-inch opening between. A variable displacement pump with its driving motor is mounted on a steel bedplate over the top crosshead which also serves as an oil reservoir. Steam and oil pressure gages are mounted in a white enameled depression on the front face of the top crosshead, behind shatter-proof glass and illuminated by indirect lighting. The usual tie rods have been eliminated, rolled steel slabs being used as tension members.

♦ ♦ ♦

High-Speed Cutoff Machine—

Cyril A. Fox, Oliver building, Pittsburgh, is announcing a rigid cutoff

Fox high-speed cutoff machine

machine, shown herewith. Design features include a balanced head, 10 horsepower totally enclosed fan-cooled motor, V-belt drive, two speeds and a solid safety cover over a 20-inch cutting wheel. The unit is built for removing gates and risers from various types of hard alloy castings and also is used for the cutting of bar stock, stainless steels, tubing, angle bars, etc.

Castings are held in a quick-acting patented clamping device. By the simple turn of a hand wheel, this device exerts tremendous pressure on the casting, holding it securely while the sprue is being cut off. The machine is capable of removing risers of a diameter as large as 6 inches. It also can be used economically for gates as large as 4 inches.

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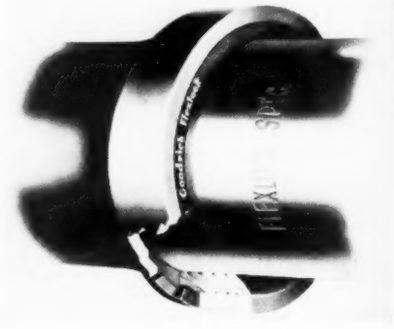
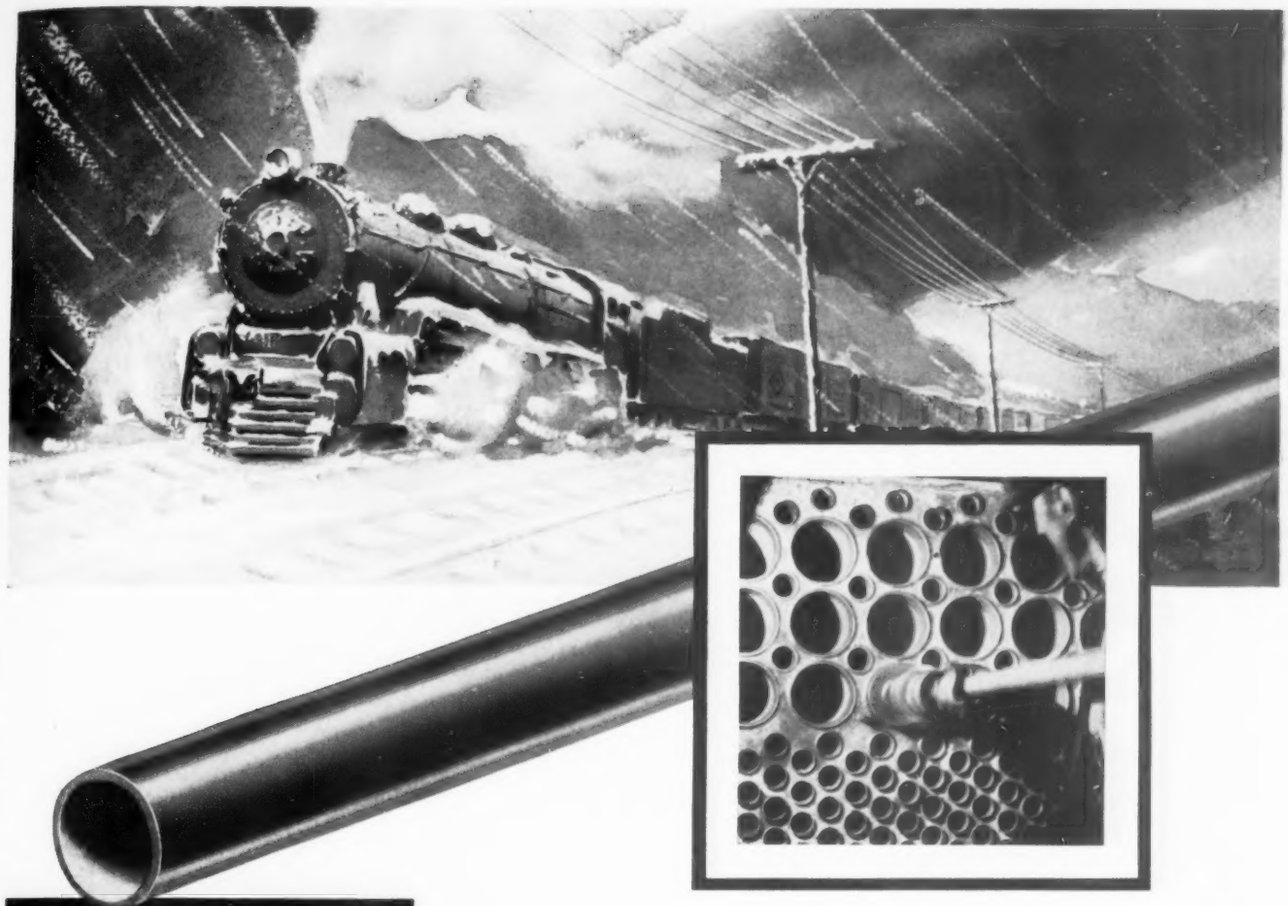
Rubber Pipe Joint—

B. F. Goodrich Co., Akron, O., is introducing a new type of pipe joint that consists of a rubber ring or gasket having internal and external cir-



Goodrich rubber pipe joint



ELECTRUNITE
REG. U.S. PAT. OFF.
STEEL & TUBES ELECTRIC WELD
BOILER TUBES

OPERATE THROUGH THIS GRUELING GRIND . . .

Compare the conditions under which stationary boilers operate with those encountered in railway service where continual pounding and vibration throw severe stresses on tubes and tube sheets. Then remember that Electrunite Boiler Tubes are operating day and night in this grueling service—and giving such a satisfactory account of themselves that old users are re-ordering and new users are specifying them right along. • These are the features that enable Electrunite Boiler Tubes to save you time and money: They are straight, true to gauge and perfectly round. They slide through the tube sheet more easily—roll in tighter with less effort. They are free from scale—have less tendency to corrode, and therefore last longer. • Any tube that merits growing preference in locomotive service will easily meet even the most rigorous of stationary boiler requirements. Ask us to send you complete descriptive data.

Steel and Tubes *Inc.*

WORLD'S LARGEST PRODUCER OF ELECTRICALLY WELDED TUBING
CLEVELAND . . . OHIO

SUBSIDIARY OF REPUBLIC STEEL CORPORATION

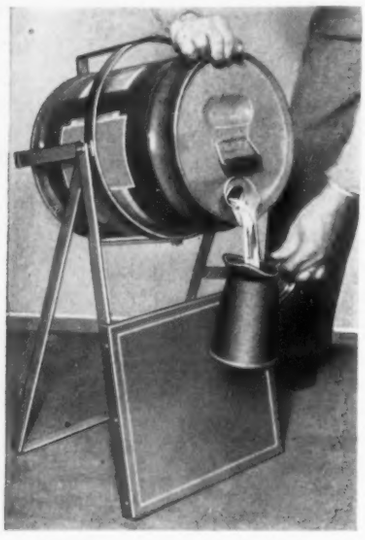
When writing Steel and Tubes, Inc., for further information, please address Department ST.

cumferential ribs which grip the bell and spigot of the pipe as shown in the illustration on page 64. The development now is available for use with specially constructed ceramic pipe in low pressure service—15 pounds per square inch maximum—and in temperatures not exceeding 175 degrees Fahr. It offers a permanent, positive seal for bell-and-spigot pipe conveying acids, alkalies, sewage and other industrial wastes.

• • •

Can Tilting Rack—

Morse Mfg. Co. Inc., Syracuse, N. Y., is introducing a tilting rack for 5-gallon cans. The device, shown herewith, holds either round or square containers in such a manner that the operator can easily



Morse can tilting rack

pour the contents of the can without getting his hands soiled or spilling the liquid. Built of steel, the unit is collapsible for convenience in shipping and storage.

• • •

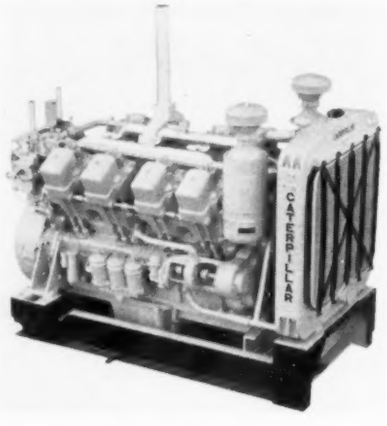
Worm Thread Grinder—

Hisey-Wolf Machine Co., Cincinnati, is building a new portable worm thread grinder in three sizes with 1, 3 and 5 horsepower motors for any voltage, alternating or direct current. The illustration herewith shows a side view of the machine with the grinding wheel, wheel guard, handwheel *A* for cross feed adjustment, handwheel *B* for horizontal adjustment. The clamp lever indicated by *C* locks the spindle after the grinding wheel has been adjusted to the desired angle, handwheel *D* raises and lowers the grinding spindle, and hand wheel *E* is for adjustment of the motor. A crank handle permits angular adjustment of the complete grinding head either to the left or to the right. A universal wheel dressing attachment can be supplied for truing bevel and straight face grinding wheels when mounted on either end of the grinding spindle. It is provided with a screw feed adjustment and graduated so that it may be set accurately at any angle.

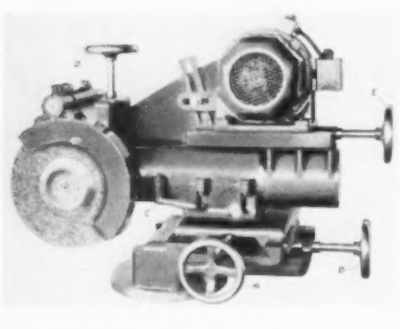
• • •

Diesel Engines—

Caterpillar Tractor Co., Peoria, Ill., is announcing three new models, thereby expanding the range of power in its diesel engine line. The largest is a V-type 8 cylinder design, shown herewith. In addition to this 160 horsepower unit, the company is introducing a 3-cylinder, 60 horsepower engine and a 4-cylinder, 44 horsepower design. The D17000, as the V-8 is known, is a true diesel engine, 4-stroke-cycle, valve-in-head, water-cooled, and features solid injection of fuel into precombustion chambers. Bore and stroke are $5\frac{3}{4}$ x 8 inches, and the governed speed is 850 revolutions per minute, the same as the next three sizes in the line. The 8 cylinders are in two groups of four, set at a 60-degree angle.

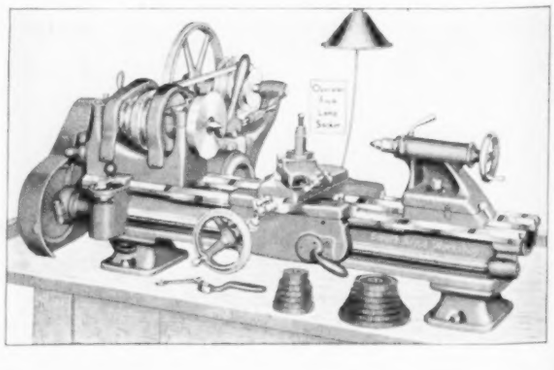


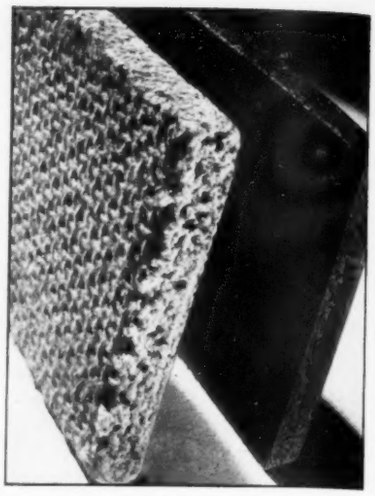
Caterpillar V-type 8-cylinder diesel engine of 160 horsepower capacity



Left — Hisey-Wolf portable worm thread grinder

Right — South Bend lathe equipped with new V-belt drive





Johns-Manville heavy-duty brake lining for industrial equipment

Heavy-Duty Brake Lining—

Johns-Manville Inc., 22 East Fortieth street, New York, now is offering its heavy-duty brake lining for general use on all types of heavy industrial equipment. It has had test use on gas and diesel friction power shovels and other excavating machinery for the past year with outstanding success, the company asserts. The material, shown herewith, is known as No. 900 woven and compressed brake lining and is flexible, readily formed, and adaptable to various speed requirements.

• • •

V-Belt Drive for Lathe—

South Bend Lathe Works, 425 East Madison street, South Bend, Ind., announces that a new V-belt drive now is optional on its new 1936 model 9-inch "Workshop" precision lathe. The motor-driven bench machine has a four-step cone headstock, with a single V-belt drive from the countershaft. This provides eight spindle speeds, four on open belt and four in back gear. Speeds range from 44 to 585 revolutions per minute. The countershaft is similarly equipped with a four-step V-pulley for single V-belt motor drive. This new improvement provides extra power to meet metalworking requirements and makes the small lathe, shown herewith, particularly suitable for special production work in manufacturing plants.

Control of Electroplating

(*Concluded from Page 44*)

cubic centimeters of dimethylglyoxime solution (1 per cent solution of the salt in ethyl alcohol) or about five times as much dimethylglyoxime as will actually combine with the nickel present. Then add ammonia until the solution reacts alkaline to litmus and allow to stand on a steam bath for about one hour.

While still hot, filter through a weighed Gooch crucible, wash well with water and then a 5 per cent solution of ethyl alcohol in water. Dry at 110-120 degrees Cent. for 45 minutes and weigh. Multiply the weight of the precipitate by 0.2032 to get the weight of the nickel present. Divide the weight of the nickel in milligrams by the area of the stripped surface in square inches to get the weight of nickel coating in m.s.i.

It must be admitted that the above test is long and involved, but to date, no other satisfactory means of determining the weights of composite electroplated coatings is available. A trained man can, however, run through this procedure rapidly and the precise accuracy of this method more than compensates for the time required.

Determination of Nickel Over Non-ferrous Metals

The following test is suitable for metals plated on brass, bronze, nickel-silver, and copper. It can be used for the determination of nickel, chromium, cadmium and zinc.

Solution

The stripping solution consists of a mixture of 10 parts, by volume, of dilute sulphuric acid (specific gravity 1.34) and one part, by volume, of dilute hydrochloric acid (specific gravity 1.05).

Procedure

The stripping solution should be maintained just below the boiling point which should not be allowed to vary below 108 or above 125 degrees Cent. During the process of stripping, the ratio of sulphuric acid to the hydrochloric acid must not be varied. If additional stripping solution is desired, more of the prepared stripping solution should be added.

The part to be stripped should be suspended on a glass hook in the stripping solution. A split watch glass or other suitable covering should be used on the beaker containing the solution to prevent loss by evaporation. A few glass beads on the bottom of the beaker will prevent the solution from "bumping." The part should remain in the solution until a visual examination reveals that all the metallic coating has been removed. In this process, as in the electrolytic process, the part to be tested first should be cleaned carefully and weighed accurately on an analytical balance. After stripping, the part should be dried and again weighed. The total weight of coating in milligrams divided by the total plated area in square inches will give the average weight of coating in m.s.i.

Determination of Copper Over Ferrous Metals

This method is simple and accurate and can be performed without any training on the part of the operator, except for the accurate weighing required.

Solutions

The sodium polysulphide solution required is made by dissolving 100 grams of sodium sulphide ($Na_2S.9H_2O$) in 500 cubic centimeters of water and adding 7 grams of sulphur. Boil the solution until the sulphur is completely dissolved. As soon as cooled, the solution is ready for use.

The potassium cyanide solution required is made by dissolving 10 grams of potassium cyanide (KCN) in 100 cubic centimeters of water.

Procedure

Carefully clean the part to be tested, dry and weight to four decimal places (i.e. 45.8392 grams). Place the part in the sodium polysulphide solution and allow it to remain for 5 minutes. At the end of this time, remove the part and thoroughly scrub with a stiff bristle brush to remove any loose metallic sulphides. This process is repeated a sufficient number of times to insure that all of the metallic coating has been converted into sulphide, as far as can be told by a visual examination.

The part then is placed in the potassium cyanide solution for not more than 10 seconds and during this time the part is moved vigorously. It is then removed, washed and scrubbed thoroughly as before. This procedure is repeated until all of the metallic sulphide is removed. If, at the end of this time, any of the original metallic coating is still remaining, the part shall again be placed in the sodium polysulphide solution until the remaining unchanged coating has been changed to the sulphide. It is then brushed as before, washed, and placed in the potassium cyanide solution.

When the coating has been completely removed, the part should be washed, dried and weighed. The loss in weight represents the weight of the copper coating on the original part. The weight of coating in m.s.i. is calculated as in all the cases given above.

The parts thus treated are not damaged and can be sent back to the electroplater for refinishing and use.

(*To be continued*)

New Trade Publications

Semiautomatic Plating Machines—Udylite Co., Detroit. A bulletin on this product, including general notes, dimensions, and features of construction.

Heaters—Fedders Mfg. Co., Buffalo. A folder announcing the addition of seven sizes to its line of Series 3 unit heaters, showing features of construction.

Pumps—Pennsylvania Pump & Compressor Co., Easton, Pa. Two bulletins, one on air cushion valve vacuum pumps, and the other the centrifugal pumps—double suction, single stage, and sleeve bearing.

Tempering Furnace—Lindberg Engineering Co., 221 Union Park court, Chicago. Bulletin No. 51 illustrates and gives the principles of the new gas fired Cyclone tempering furnace. Dimensions are included.

Alloy Steels—Alloy steel division, Republic Steel Corp., Massillon, O. A 106-page handbook presenting chemical and metallurgical data on standard and special steels, outlining factors to be considered in their selection and heat treatment, with applications of alloy steel for specific uses in leading industries.

Air Compressors and Presses—Wright manufacturing division, American Chain Co. Inc., York, Pa. Two announcements pertinent to the company's latest additions of a complete line of air compressors, including both single and double stage units in stationary and portable styles, and addition of a line of hydraulic and screw presses.

Grate Stoker—Combustion Engineering Co. Inc., 200 Madison avenue, New York. A 16-page catalog, No. C-5, describing recent improvements in details of the Coxe traveling grate stoker, with illustrations of its drive and all its parts; another catalog illustrates and describes its sectional-header type boiler as built for a wide range of steam pressures, capacities and different methods of fuel-firing.

Heaters and Pumps—Worthington Pump & Machinery Corp., Harrison, N. J. Two bulletins, W-321-B8 359 and W-210-B19 359; the first points out features of the Monobloc centrifugal pumps, type DH, for hot well service and for pumping volatile liquids against medium heads, the second on stationary feedwater heaters with specific details of the non-deaerating type.

A Heavy Coat FOR Heavy Weather

PURITY and generosity of coating give Weirton galvanized roofing a big advantage in its conflict with time and the elements. Add to this long-term effectiveness of the galvanizing, the strength of the steel base and the careful workmanship employed, and you have the three-fold reason for its good reputation. Weirton galvanized roofing and siding is made flat, corrugated and V-crimped. May we supply details of its service capacity?

WEIRTON STEEL COMPANY · WEIRTON, W. VA.

DIVISION OF NATIONAL STEEL CORPORATION

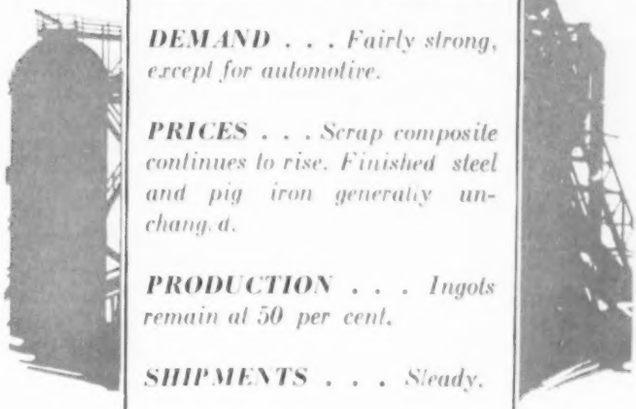
UNIT OF NATIONAL STEEL

WEIRTON

galvanized Roofing *and* Siding

Automotive Decline Slower; Steel Rate Steady

More Railroad Orders; Structural Average High; Scrap Continues Upward



MARKET IN TABLOID

DEMAND . . . *Fairly strong, except for automotive.*

PRICES . . . *Scrap composite continues to rise. Finished steel and pig iron generally unchanged.*

PRODUCTION . . . *Ingots remain at 50 per cent.*

SHIPMENTS . . . *Steady.*

RETRENCHMENT in automotive steel buying apparently has reached its low point and is leveling off, with some indications of a moderate improvement this month, while more railroad requirements are coming to the front.

The net result has been to hold steelworks operations at a steadier rate, the national average last week continuing at 50 per cent.

The recent switch in trend of steel demand away from the lighter finished materials used by the automobile industry to the heavier products for railroads and construction work probably is the outstanding market development.

Within the week 62,000 tons of rails were placed, Chicago & North Western distributing 35,000 tons, in addition to the 16,000 tons in the preceding week. Southern Pacific awarded 17,000 tons, Atlantic Coast Line 6000, Virginian 4100. Erie's inquiry, expected shortly, will include 500 box cars and 300 automobile cars. Many inquiries for stainless steel streamlined passenger cars are pending, estimated as high as 100. Chicago, Burlington & Quincy has ordered two 7-car Zephyr trains, following its purchase of two 10-car trains. For Pennsylvania's car program, 3500 tons of bolts, nuts and rivets have just been distributed.

Sub-zero weather has interfered with outdoor construction work in many sections of the country, slowed up iron and steel and raw materials shipments, even affecting some steel plant operations, short of gas and other fuels.

Nevertheless, structural steel awards in the week totaled 26,500 tons, aided by 12,300 tons for a New York city elevated highway, and 3000 tons for railroad bridges in the Pittsburgh district. Los Angeles placed an additional 14,350 tons of reinforcing bars for the Colorado river aqueduct. The government awarded 4498 tons of bars for the Fort Peck, Montana, dam. San Francisco entered the market for 4400 tons of 60-inch welded steel pipe. Gulf Refining Co. has placed two tankers, taking 10,000 tons of steel.

Adverse weather conditions are affecting retail automobile sales. Dealers are stocked and manufacturers have trimmed production schedules to about 300,000 for this month, compared with 350,000 in January. Last week assemblies totaled 85,800, down 1600 from the preceding week. Mill stocks of automotive sheets and strip carried over from last year when buyers were ordering freely in anticipation of possible price advances still are heavy.

Producers of these materials are making strong efforts to curb price concessions in the Detroit district and elsewhere. On the other hand, many large consumers of these and other finished steels, encouraged by steel's fourth-quarter profit statements are bringing more pressure against prices. A second extension, to Feb. 15, has been granted as the effective date for the $2 a ton advance on semifinished steel. Liberal concessions are noted on nail prices in the East and South. Some makers of butt weld pipe have reduced prices 5 per cent.

Scrap continues strong and tending upward, in the main due to a scarcity and restrictions imposed by the weather.

Daily average pig iron production in January, 65,445 gross tons, was down 4.1 per cent from December, while the total showed the same percentage reduction, to 2,028,791 tons. There was a net loss of one active stack, to 119 operating at the close of January.

When the official steel ingot production figures become available this week they will show for January a reduction of about 8 per cent from December in daily averages. It was a throwback to a rate between the August and September production.

Pittsburgh district steelworks operations last week advanced 1½ points to 39 per cent; Wheeling 8 to 78; Buffalo 2 to 32. Youngstown was down 1 to 60; Chicago 1 to 52; Cleveland 8 to 59, and others unchanged.

STEEL's iron and steel price composite is up 2 cents to $33.40; the finished steel index remains $53.70, while the scrap composite has advanced 4 cents to $13.25.

COMPOSITE MARKET AVERAGES

	Feb. 1	Jan. 25	Jan. 18	One Month Ago Jan., 1936	Three Months Ago Nov., 1935	One Year Ago Feb., 1935	Five Years Ago Feb., 1931
Iron and Steel	$33.40	$33.38	$33.34	$33.34	$33.15	$32.54	$31.64
Finished Steel	53.70	53.70	53.70	53.70	53.70	54.00	49.42
Steelworks Scrap	13.25	13.21	13.17	13.15	12.92	11.66	10.39

Iron and Steel Composite:—Pig iron, scrap, billets, sheet bars, wire rods, tin plate, wire, sheets, plates, shapes, bars, black pipe, rails, alloy steel, hot strip, and cast iron pipe at representative centers. Finished Steel Composite:—Plates, shapes, bars, hot strip, nails, tin plate, pipe. Steelworks Scrap Composite:—Heavy melting steel and compressed sheets.

A COMPARISON OF PRICES

Representative Market Figures for Current Week; Average for Last Month, Three Months and One Year Ago

Finished Material

	Feb. 1 1936	Jan., 1936	Nov., 1935	Feb., 1935
Steel bars, Pittsburgh	1.85c	1.85	1.85	1.80
Steel bars, Chicago	1.90	1.90	1.90	1.85
Steel bars, Philadelphia	2.16	2.16	2.16	2.09
Iron bars, Terre Haute, Ind.	1.75	1.75	1.75	1.75
Shapes, Pittsburgh	1.80	1.80	1.80	1.80
Shapes, Philadelphia	2.01½	2.01½	2.01½	2.00½
Shapes, Chicago	1.85	1.85	1.85	1.85
Tank plates, Pittsburgh	1.80	1.80	1.80	1.80
Tank plates, Philadelphia	2.00	1.99	1.99	1.98½
Tank plates, Chicago	1.85	1.85	1.85	1.85
Sheets, No. 10, hot rolled, Pitts.	1.85	1.85	1.85	1.85
Sheets, No. 24, hot ann., Pitts.	2.40	2.40	2.40	2.40
Sheets, No. 24, galv., Pitts.	3.10	3.10	3.10	3.10
Sheets, No. 10, hot rolled, Gary	1.95	1.95	1.95	1.95
Sheets, No. 24, hot anneal., Gary	2.50	2.50	2.50	2.50
Sheets, No. 24, galvan., Gary	3.20	3.20	3.20	3.20
Plain wire, Pittsburgh	2.30	2.30	2.30	2.30
Tin plate, per base box Pitts.	5.25	5.25	5.25	5.25
Wire nails Pitts.	2.40	2.40	2.40	2.60

Semifinished Material

Sheet bars, open-hearth, Youngs.	$30.00	30.00	29.50	28.00
Sheet bars, open-hearth, Pitts.	30.00	30.00	29.50	28.00
Billets, open-hearth, Pittsburgh	29.00	29.00	28.50	27.00
Wire rods, Pittsburgh	40.00	29.00	38.00	38.00

Pig Iron

	Feb. 1 1936	Jan., 1936	Nov., 1935	Feb., 1935
Bessemer, del. Pittsburgh	$20.8132	20.8132	20.8132	19.76
Basic, Valley	19.00	19.00	19.00	18.00
Basic, eastern, del. eastern Pa.	20.8132	20.8132	20.8132	19.76
No. 2 fdry., del. Pittsburgh	20.3132	20.3132	20.3132	19.26
No. 2 fdry., Chicago	19.50	19.50	19.50	18.50
Southern No. 2, Birmingham	15.50	15.50	14.75	14.50
Southern No. 2, del. Cincinnati	20.2007	20.2007	20.2007	19.13
No. 2X eastern, del. Phila.	21.6882	21.6882	21.6882	20.63
Malleable, Valley	19.50	19.50	19.50	18.50
Malleable, Chicago	19.50	19.50	19.50	18.50
Lake Sup. charcoal, del. Chi.	25.2528	25.2528	25.2528	24.04
Ferromanganese, del. Pitts.	80.13	90.13	90.13	89.79
Gray forge, del. Pittsburgh	19.6741	19.67	19.67	18.63

Scrap

Heavy melting steel, Pittsburgh	$14.50	14.50	13.65	13.25
Heavy melt. steel, No. 2, east Pa.	11.50	11.37½	11.00	10.15
Heavy melting steel, Chicago	13.50	13.40	13.20	11.65
Rails for rolling, Chicago	14.25	14.25	14.30	12.55
Railroad steel specialties, Chicago	14.75	14.40	13.75	12.50

Coke

Connellsville, furnace, ovens	$3.50	4.00	4.35	4.60
Connellsville, foundry, ovens	4.00	3.50	3.55	3.60
Chicago, by-product foundry, del.	9.75	9.75	9.75	9.25

Steel, Iron, Raw Material, Fuel and Metals Prices

Except when otherwise designated, prices are base, f.o.b. cars. Asterisk denotes price change this week

Sheet Steel

Hot Rolled No. 10, 24-48 in.

Pittsburgh	1.85c
Gary	1.95c
Chicago, delivered	1.98c
New York, del.	2.20c
Philadelphia, del.	2.16c
Birmingham	2.00c
St. Louis, del.	2.18c
Pacific ports, f.o.b. cars, dock	2.40c

Hot Rolled Annealed No. 24

Pittsburgh	2.40c
Gary	2.50c
Chicago, delivered	2.53c
Detroit, delivered	2.45c-2.60c
New York, del.	2.75c
Philadelphia, del.	2.71c
Birmingham	2.55c
St. Louis, del.	2.72c
Pacific ports, f.o.b. cars, dock	3.05c

Galvanized No. 24

Pittsburgh	3.10c
Gary	3.20c
Chicago, delivered	3.23c
Philadelphia, del.	3.41c
New York, del.	3.45c
Birmingham	3.25c
St. Louis, del.	3.43c
Pacific ports, f.o.b. cars, dock	3.70c

Tin Mill Black No. 28

Pittsburgh	2.75c
Gary	2.85c
St. Louis, delivered	3.08c

Cold Rolled No. 10

Pittsburgh	2.50c
Gary	2.60c
Detroit, delivered	2.55c-2.70c
Philadelphia, del.	2.81c
New York, del.	2.85c
Pacific ports, f.o.b. cars, dock	3.10c

Cold Rolled No. 20

Pittsburgh	2.95c
Gary	3.05c
Detroit, delivered	3.00c-3.15c
Philadelphia, del.	3.26c
New York, del.	3.30c

Enameling Sheets

Pittsburgh, No. 10	2.50c
Pittsburgh, No. 20	3.10c
Gary, No. 10	2.60c
Gary, No. 20	3.20c

Tin and Terne Plate

Gary base, 10 cents higher.

Tin plate, coke base (box) Pittsburgh	$5.25
Do., waste-waste	2.75c
Do., strips	2.50c
Long ternes, No. 24 unassorted, Pitts.	3.40c
Do., Gary	3.50c

Corrosion and Heat-Resistant Alloys

Pittsburgh base, cents per lb.

Chrome-Nickel

	No. 302	No. 304
Bars	23.00	24.00
Plates	26.00	28.00
Sheets	33.00	35.00
Hot strip	20.75	22.75
Cold strip	27.00	29.00

Straight Chromes

	No. 410	No. 430	No. 442	No. 446
Bars	17.00	18.50	21.00	26.00
Plates	20.00	21.50	24.00	29.00
Sheets	25.00	28.00	31.00	35.00
Hot strip	15.75	16.75	21.75	26.75
Cold stp.	20.50	22.00	27.00	35.00

Steel Plates

Pittsburgh	1.80c
New York, del.	2.09c
Philadelphia, del.	1.99c
Boston, delivered	2.22c
Buffalo, delivered	2.05c
Chicago or Gary	1.85c
Cleveland, del.	1.99½c
Birmingham	1.95c
Coatesville, base	1.90c
Sparrows Pt., base	1.90c
Pacific ports, f.o.b. cars, dock	2.35c
St. Louis, delivered	2.08c

Structural Shapes

Pittsburgh	1.80c
Philadelphia, del.	2.01½c
New York, del.	2.06½c
Boston, delivered	2.20½c
Bethlehem	1.90c
Chicago	1.85c
Cleveland, del.	2.00c
Buffalo	1.90c
Gulf Ports	2.20c
Birmingham	1.95c
Pacific ports, f.o.b. cars, dock	2.35c

Bars

Soft Steel

(Base, 5 to 25 tons)

Pittsburgh	1.85c
Chicago or Gary	1.90c
Duluth	2.00c
Birmingham	2.00c
Cleveland	1.90c
Buffalo	1.95c
Detroit, delivered	2.00c
Pacific ports, f.o.b. cars, dock	2.40c
Philadelphia, del.	2.16c
Boston, delivered	2.27c
New York, del.	2.20c
Pitts., forg. qual.	2.10c

Rail Steel

To Manufacturing Trade

Pittsburgh	1.70c
Chicago or Gary	1.75c
Moline, Ill.	1.75c
Cleveland	1.75c
Buffalo	1.80c

Iron

Troy, N. Y.	1.70c
Terre Haute, Ind.	1.75c
Chicago	1.80c
Philadelphia	2.06c
Pittsburgh, refined	2.75-7.50c

Reinforcing

New billet, straight lengths, quoted by distributors.

Pittsburgh	2.05c
Chicago, Gary, Buffalo, Cleve., Birm., Young.	2.10c
Gulf ports	2.45c
Pacific coast ports f.o.b. cars dock	2.45c
Philadelphia, del.	2.11c-2.16c

Rail steel, straight lengths, quoted by distributors

Pittsburgh	1.90c
Chicago, Buffalo, Cleveland, Birm., Young.	1.95c
Gulf ports	2.30c

Wire Products

Wire Products (Prices apply to straight or mixed carloads; less carloads $4 higher; less carloads fencing $5 over base column.)

Base Pitts.-Cleve. 100 lb. keg.

Standard wire nails	$2.40
Cement coated nails	2.40
Galvanized nails, 15 gage and coarser	4.40
do. finer than 15 gage	4.90

(Per pound)

Polished staples	3.10c
Galvanized fence staples	3.35c
Barbed wire, galv.	2.80c
Annealed fence wire	2.45c
Galvanized fence wire	2.80c
Woven wire fencing (base column, c.l.)	$61.00

To Manufacturing Trade

Plain wire, 6-9 gage	2.30c

Anderson, Ind. (merchant products only) and Chicago up $1; Duluth up $2; Birmingham up $3.

Spring wire, Pittsburgh or Cleveland	2.90c

Do., Chicago up $1, Worcester, $2.

Cold-Finished Carbon Bars and Shafting

Base, Pitts., one size, shape, grade, shipment at one time to one destination

10,000 to 19,999 lbs.	2.10c
20,000 to 59,999 lbs.	2.05c
60,000 to 99,999 lbs.	2.00c
100,000 lbs. and over	1.97½c

Gary, Ind., Cleve., Chi., up 5c; Buffalo, up 10c; Detroit, up 20c; eastern Michigan, up 25c.

Alloy Steel Bars (Hot)

Pittsburgh, Buffalo, Chicago, Massilon, Canton, Bethlehem 2.45c

S.A.E.	Alloy Diff.	S.A.E.	Alloy Diff.
2000	0.25	3100	0.55
2100	0.55	3200	1.35
2300	1.50	3300	3.80
2500	2.25	3400	3.20
4100	0.15 to 0.25 Mo.		0.50
4600	0.20 to 0.30 Mo. 1.25-1.75 Ni.		1.05
5100	0.80-1.10 Cr.		0.45
5100	Cr. spring		base
6100	bars		1.20
6100	spring		0.70
Cr., Ni., Van.			1.50
Carbon Van.			0.95
9250	carbon base plus extras		

Piling

Pittsburgh	2.15c
Chicago, Buffalo	2.25c

Strip and Hoops

Hot strip to 23/8-in. Pittsburgh	1.85c
Chicago or Gary	1.95c
Birmingham base	2.00c
Detroit, delivered	2.05c
Philadelphia, del.	2.16c
New York, del.	2.20c
Cooperage hoop, Pittsburgh	1.95c
Chicago	2.05c
Cold-strip, Pitts. Cleve.	2.60c
Detroit, del.	2.65c
Worcester, Mass.	2.80c

Rails, Track Material

(Gross Tons)

Standard rails, mill	$36.37½
Relay rails, Pitts. 20-45 lbs.	$28.00
45-50 lbs.	$25.00
50-60 lbs.	$26.00
70-75 lbs.	$24.50
80-90 lbs.	$26.00
100 lbs.	$27.00
Light rails, billet qual. Pitts., Chi.	$35.00
Do., reroll, qual.	34.00
Angle bars, billet, Gary, Ind., So. Chi.	2.55c
Do., axle steel	2.10c
Spikes, R. R. base	2.60c
Track bolts, base	3.60c
Tie plates, base	1.90c

Base, light rails 25 to 40 lbs.; 50 to 60 lbs. inclusive up $2; 16 and 20 lbs., up $1; 12 lbs. up $2; 8 and 10 lbs., up $5. Base railroad spikes 200 kegs or more; base tie plates 20 tons.

Bolts and Nuts

Pittsburgh, Cleveland, Birmingham, Chicago. Discounts to legitimate trade for all case lots, Dec. 1, 1932, lists, 10% extra for less full containers.

Carriage and Machine

½ x 6 and smaller	70-10-5 off
Do. larger	70-10 off
Tire bolts	55 off

Plow Bolts

All sizes	70-10 off

Stove Bolts

In packages with nuts attached 72½-10 off; in packages with nuts separate 72½-10-5 off; in bulk 82½ off on 15,000 of 3-inch and shorter, or 5000 over 3-inch.

Step bolts	65-5 off
Elevator bolts	65-5 off

Nuts

S. A. E. semifinished hex.; ½ to 1-inch	60-20-15 off
Do., ½ to 1-inch	60-20-15 off
Do., over 1-inch	60-20-15 off

Hexagon Cap Screws

Milled	80-10-10 off
Upset, 1-in. smaller	85 off

Square Head Set Screws

Upset, 1-in., smaller	75-10 off
Headless set screws	75 off

Rivets, Wrought Washers

Struc., c. l., Pittsburgh, Cleveland	2.90c
Struc., c. l., Chicago	3.00c
½-in. and smaller, Pitts., Chi., Cleve.	70 and 5 off
Wrought washers, Pitts., Chi., Phila., to jobbers & large nut, bolt mfrs.	$6.25 off

Cut Nails

Cut nails, Pitts.; (10% discount on size extras)	$2.75
Do. less carloads, 5 kegs or more, no discount on size extras	$3.05
Do., under 5 kegs; no disc. on size extras	$3.20

Pipe and Tubing

Base $200 net ton, except on standard commercial seamless boiler tubes under 2 inches and cold drawn seamless tubing.

Welded Iron, Steel Pipe

Base discounts on steel pipe, Pitts., Lorain, O., to consumers in carloads, Gary, Ind., 2 points less, Chicago, del. 2½ points less, Wrought pipe, Pittsburgh.

Butt Weld

In.	Blk.	Galv.
Steel		
¼ and ⅜	53½	35
½	58½	47
¾	62	52
1—3	64	55
Iron		
½	31½	15
¾	36½	20½
1—1¼	39½	25½
2	41½	26

Lap Weld

Steel		
2	60	51
2½—3	63	54
3½—6	65	56
7 and 8	64	54
9 and 10	63½	53½
Iron		
2	37	22½
2½—3½	38	25
4—8	40	28½

Line Pipe

Steel	
½, butt weld	57½
⅛-inch butt weld	50½
¼—⅜, butt weld	52½
¾, butt weld	61
1—3, butt weld	63
2-inch, lap weld	59
2½—3, lap weld	62
3½—6, lap weld	64
7—8, lap weld	63
Iron	
⅛—1½ inch, black and galv.	take 4 pts. over; 2½—6 inch 2 pts. over discounts for same sizes, standard pipe lists, 8—12-inch, no extra.

Boiler Tubes

C. l. Discounts, f.o.b. Pitts.

Lap Weld Steel		*Charcoal Iron*	
2—2¼	33	1¾	8
2½—2¾	40	2—2¼	13
3	47	2½—2¾	16
3¼—3½	50	3	17
4	52	3¼—3½	18
4½—5	42	4	20
		4½	21

In lots of a carload or more, above discounts subject to preferential of two 5% and one 7½% discount on steel and 10% on charcoal iron.

Lapwelded steel: 200 to 9999 pounds, ten points under base, one 5% and one 7½%. Under 2000 pounds 15 points under base, one 5% and one 7½%. Charcoal iron: 10,000 pounds to carloads, base less 5%; under 10,000 lbs., 2 points under base.

Seamless Boiler Tubes

Under date of May 15 in lots of 40,000 pounds or more for cold-drawn boiler tubes and in lots or 40,000 pounds or feet or more for hot-finished boiler tubes, revised prices are quoted for 55 cold-drawn boiler tube sizes ranging from ¼ to 6-inch outside diameter in 30 wall thicknesses, decimal equivalent from 0.035 to 1.000, on a dollars and cents basis per 100 feet and per pound. Less-carloads revised as of July 1, 1935, card.

Hot-finished carbon steel boiler tube prices also under date of May 15 range from 1 through 7 inches outside diameter, inclusive, and embrace 47 size classifications in 22 decimal wall thicknesses ranging from 0.109 to 1.000, prices also being on a lb. and 100 ft. basis.

Seamless Tubing

Cold drawn; f.o.b. mill disc.

100 ft. or 150 lbs.	32%
15,000 ft. or 22,500 lbs.	70%

Cast Iron Water Pipe

Class B Pipe—Per Net Ton

6-in. & over, Birm.	$39.00-40.00
4-in., Birmingham	42.00-43.00
4-in., Chicago	50.40-51.40
6 to 24-in. Chicago	47.40-48.40
6-in. & over, east. fdy.	43.00
Do., 4-in.	46.00

Class A pipe $3 over Class B

Stnd. fitgs., Birm. base	$100.00

Semifinished Steel

Billets and Blooms

4 x 4-inch base; gross ton

Pitts., Chi., Cleve., and Youngstown	$29.00
Philadelphia	34.67
Duluth	31.00

Forging Billets

6 x 6 to 9 x 9-in., base

Pitts., Chi., Buff.	35.00
Forging, Duluth	37.00

Sheet Bars

Pitts., Cleve., Young., Chi., Buff., Canton, Sparrows Pt.	30.00

Slabs

Pitts., Chi., Cleve., Young.	29.00

Wire Rods

(Common; combination up $2)

Pitts., Cleveland	40.00
Chicago	41.00
Worcester, Mass.	42.00

Skelp

Pitts., Chi., Young., Buff., Coatesville, Sparrows Point	1.80c

Coke

Price Per Net Ton

Beehive Ovens

Connellsville, fur.	$3.50- 3.65
Connellsville, fdry.	4.00- 4.25
Connel., prem. fdry.	5.50- 5.75
New River fdry.	6.00
Wise county fdry.	4.45- 5.00
Wise county fur.	4.00- 4.50

By-Product Foundry

Newark, N. J., del.	9.70-10.15
Chi., ov., outside del.	9.00
Chicago, del.	9.75
New England, del.	11.50
St. Louis, del.	10.00
Birmingham, ovens	6.50
Indianapolis, del.	9.40
Cincinnati, del.	9.50
Cleveland, del.	9.75
Buffalo, ovens	7.50- 8.00
Detroit, ov., out. del.	9.00
Philadelphia, del.	9.38

Coke By-Products

Per gallon, producers' plants.

Tank lots	Spot
Pure and 90% benzol	18.00c
Toluol	30.00c
Solvent naphtha	30.00c
Commercial xylol	30.00c

Per lb. f.o.b. New York.

Phenol (200 lb. drums)	16.30c
Do. (100 lbs.)	17.30c

Eastern Plants, per lb.

Naphthalene flakes and balls, in bbls., to jobbers	6.75c

Per 100 lb. Atlantic seaboard

Sulphate of ammonia	$1.20

†Western prices, ½-cent up.

Pig Iron

Delivered prices include switching charges only as noted. No. 2 foundry is 1.75-2.25 sil.; 25c diff. for each 0.25 sil. above 2.25; 50c diff. for each 0.25 below 1.75. Gross tons.

Basing Points:	No. 2 Fdry	Malleable	Basic	Bessemer
Bethlehem, Pa.	$20.50	$21.00	$20.00	$21.50
Birdsboro, Pa.	20.50	21.00	20.00	21.50
Birmingham, Ala., southern del.	15.50	15.50	14.50	21.00
Buffalo	19.50	20.00	18.50	20.50
Chicago	19.50	19.50	19.00	20.00
Cleveland	19.50	19.50	19.00	20.00
Detroit	19.50	19.50	19.00	20.00
Duluth	20.00	20.00	.....	20.50
Erie, Pa.	19.50	20.00	19.00	20.50
Everett, Mass.	20.50	21.00	20.00	21.50
Hamilton, O.	19.50	19.50	19.00	.....
Jackson, O.	20.25	20.25	19.75	.....
Neville Island, Pa.	19.50	19.50	19.00	20.00
Provo, Utah	17.50	.....	17.00	.....
Sharpsville, Pa.	19.50	19.50	19.00	20.00
Sparrows Point, Md.	20.50	.....	20.00	.....
Swedeland, Pa.	20.50	21.00	20.00	21.50
Toledo, O.	19.50	19.50	19.00	20.00
Youngstown, O.	19.50	19.50	19.00	20.00
Delivered from Basing Points:				
Akron, O., from Cleveland	20.76	20.76	26.26	21.26
Baltimore from Birmingham	21.08	.....	19.96	.....
Boston from Birmingham	20.62	.....	20.50	.....
Boston from Everett, Mass.	21.00	21.50	20.50	22.00
Boston from Buffalo	21.00	21.50	20.50	22.00
Brooklyn, N. Y., from Bethlehem	22.93	23.43	.....	.....
Brooklyn, N. Y., from Bmghm.	22.50	.....	.....	.....
Canton, O., from Cleveland	20.76	20.76	20.26	21.26
Chicago from Birmingham	†19.72	.....	19.60	.....
Cincinnati from Hamilton, O.	20.58	20.58	20.08	.....
Cincinnati from Birmingham	20.20	.....	19.20	.....
Cleveland from Birmingham	19.62	.....	19.12	.....
Indianapolis from Hamilton, O.	21.93	21.93	21.43	22.43
Mansfield, O., from Toledo, O.	21.26	21.26	20.76	21.76
Milwaukee from Chicago	20.57	20.57	20.07	21.07
Muskegon, Mich., from Chicago Toledo or Detroit	22.60	22.60	22.10	23.10
Newark, N. J., from Birmingham	21.61	.....	.....	.....
Newark, N. J., from Bethlehem	21.99	22.49	.....	.....
Philadelphia from Birmingham	20.93	.....	20.81	.....
Philadelphia from Swedeland, Pa.	21.31	21.81	20.81	.....
Pittsburgh district from Neville Island	Neville base plus $1.21 switching charges			67c, 81c and
Saginaw, Mich., from Detroit	21.75	21.75	21.25	21.25

Delivered from Basing Points:	No. 2 Fdry	Malleable	Basic	Bessemer
St. Louis, northern	20.00	20.00	19.50	.....
St. Louis from Birmingham	†19.62	.....	19.50	.....
St. Paul from Duluth	21.94	21.94	.....	22.44

†Over 0.70 phos.

Low Phos.

Basing Points: Birdsboro and Steelton, Pa., and Standish, N. Y., $24.00, Phila. base, standard and copper bearing, $25.13.

Gray Forge		Charcoal	
Valley furnace	19.00	Lake Superior fur.	$22.00
Pitts. dist. fur.	19.00	Do., del. Chicago	25.25
		Lyles, Tenn.	22.50

Silvery†

Jackson county, O., base; 6-6.50 per cent $22.75; 6.51-7—$23.25; 7-7.50—$23.75; 7.51-8—$24.25; 8-8.50—$24.75; 8.51-9—$25.25; 9-9.50—$25.75. Buffalo $1.25 higher.

Bessemer Ferrosilicon†

Jackson county, O., base: Prices are the same as for silveries, plus $1 a ton.

†The lower all-rail delivered price from Jackson, O., or Buffalo is quoted with freight allowed.

Manganese differentials in silvery iron and ferrosilicon. 2 to 3%, $1 per ton add. Each unit over 3%, add $1 per ton.

Refractories

Per 1000 f.o.b. Works

Fire Clay Brick

Super Quality

Pa., Mo., Ky.	$55.00

First Quality

Pa., Ill., Md., Mo., Ky.	$45.00
Alabama, Ga.,	$38.00-45.00

Second Quality

Pa., Ill., Ky., Md., Mo.	40.00
Ga., Ala.	35.00

Ohio

First quality	$40.00
Intermediary	37.00
Second quality	28.00

Malleable Bung Brick

All bases	50.00

Silica Brick

Pennsylvania	$45.00
Joliet, E. Chicago	54.00
*Birmingham, Ala.	48.00

Magnesite

Imported dead-burned grains, net ton f.o.b. Chester, Pa., and Baltimore bases (bags)	$45.00
Domestic dead-burned grains, net ton f.o.b. Chester, Pa., and Baltimore bases (bags)	40.00
Domestic dead-burned gr. net ton f.o.b. Chewelah, Wash. (bulk)	22.00

Basic Brick

Net ton, f.o.b. Baltimore, Plymouth Meeting, Chester, Pa.

Chrome brick	$45.00
Chemically bonded chrome brick	45.00
Magnesite brick	65.00
Chemically bonded magnesite brick	55.00

Fluorspar, 85-5

Washed gravel, duty paid, tide, net ton	$20.00
Washed gravel, f.o.b. Ill., Ky., net ton, carloads, all-rail	$16.00
Do., for barge	$17.50

Ferroalloys

Dollars, except Ferrochrome

Ferromanganese, 78-82% tidewater, duty paid	75.00
Do., Balti. base	75.00
Do., del. Pittsb'gh	80.13
Spiegeleisen, 19-20% dom. Palmerton, Pa., spot†	26.00
Do., New Orleans	26.00
Ferrosilicon, 50% freight all., cl.	77.50
Do., less carload	85.00
Do., 75 per cent	126-130.00
Spot, $5 a ton higher.	
Silicoman., 2½ carb.	85.00
2% carbon, 90.00; 1%.	100.00
Ferrochrome, 66-70 chromium, 4-6 carbon, cts. lb. del.	10.00
Ferrotungsten, stand., lb. con. del.	1.35- 1.45
Ferrovanadium, 35 to 40% lb., cont.	2.70- 2.90
Ferrotitanium, c. l., prod. plant, frt. allow., net ton	137.50
Spot, 1 ton, frt. allow., lb.	7.00
Do., under 1 ton	7.50
Ferrophosphorus, per ton, c. l., 17-19% Rockdale, Tenn., basis, 18%, $3 unitage	58.50
Ferrophosphorus, electrolytic, per ton c. l. 23-26% f.o.b. Anniston, Ala., 24% $3 unitage	75.00
Ferromolybdenum, stand. 55-65%, lb.	0.95
Molybdate, lb. cont.	0.80

†Carloads, Quan. diff. apply.

Nonferrous

METAL PRICES OF THE WEEK

Spot unless otherwise specified. Cents per pound

	Copper: Electro, del. Conn	Copper: Lake, del. Midwest	Copper: Casting, refinery	Straits Tin: New York Spot	Straits Tin: New York Futures	Lead: East St. L.	Lead: New York	Zinc: St. L.	Aluminum 99%	Antimony: Chinese Spot, N. Y.	Nickel: Cathodes
Jan. 25	9.25	9.37½	8.85	46.25	44.87½	4.50	4.35	4.85	*19.00	12.62½	35.00
Jan. 27	9.25	9.37½	8.85	46.25	45.00	4.50	4.35	4.85	*19.00	12.62½	35.00
Jan. 28	9.25	9.37½	8.85	46.25	44.87½	4.50	4.35	4.85	*19.00	12.62½	35.00
Jan. 29	9.25	9.37½	8.85	48.00	45.75	4.50	4.35	4.85	*19.00	12.75	35.00
Jan. 30	9.25	9.37½	8.85	48.12½	45.85	4.50	4.35	4.85	*19.00	12.75	35.00
Jan. 31	9.25	9.37½	8.85	48.37½	46.00	4.50	4.35	4.85	*19.00	12.75	35.00

*Nominal range 19.00 to 21.00c.

MILL PRODUCTS

F.o.b. mill base, cents per lb. except as specified. Copper brass products based on 9.00c Conn. copper.

Sheets	
Yellow brass (high)	14.62½
Copper, hot rolled	16.50
Lead cut to jobbers	8.25
Zinc, 100-lb. base	9.50
Tubes	
High yellow brass	16.87½
Seamless copper	17.00
Rods	
High yellow brass	13.12½
Copper, hot rolled	13.50
Anodes	
Copper untrimmed	14.00
Wire	
Yellow brass (high)	15.12½

OLD METALS

Deal. buying prices, cents lb.

No. 1 Composition Red Brass	
New York	5.75- 6.00
Cleveland	6.37½- 6.50
*Chicago	6.00- 6.25
*St. Louis	5.75- 6.00
Heavy Copper and Wire	
New York, No. 1	7.00- 7.25
*Chicago, No. 1	7.00- 7.50
Cleveland	6.75- 7.00
St. Louis, No. 1	7.00- 7.37½
Composition Brass Borings	
New York	5.00- 5.25
Light Copper	
New York	5.75- 6.00
*Chicago	5.50- 6.00
Cleveland	5.87½- 6.00
St. Louis	5.75- 6.00
Light Brass	
*Chicago	3.50- 3.75
Cleveland	3.25- 3.50
St. Louis	3.50- 3.75
Lead	
New York	3.50- 3.75
Cleveland	3.50- 3.75
Chicago	3.37½-3.62½
*St. Louis	3.50- 3.75
Zinc	
New York	2.00- 2.25
Cleveland	2.50- 2.75
St. Louis	2.75-3.00
Aluminum	
Borings, Cleveland	9.00- 9.50
Mixed, cast, Cleve.	13.00-13.25
*Mixed, cast, St. L.	12.50-12.75
Clips, soft, Cleve.	15.00-15.25

SECONDARY METALS

Brass ingot, 85-5-5-5	9.50
Stand. No. 12 alum.	17.00-17.50

Iron and Steel Scrap Prices

Corrected to Friday night. Gross tons delivered to consumers, except where otherwise stated

HEAVY MELTING STEEL

Birmingham	9.50-10.50
Boston, dock, expt.	10.25
Boston, domestic	8.75
Buffalo, No. 1	11.00-11.50
Buffalo, No. 2	12.25-12.75
Chicago, No. 1	13.25-13.75
Cleveland, No. 1	13.25-13.75
Cleveland, No. 2	12.25-12.75
Detroit, No. 1	10.00-10.50
Detroit, No. 2	9.25- 9.75
Eastern Pa., No. 1	12.50-13.00
Eastern Pa., No. 2	11.50
Federal, Ill.	10.50-11.00
Granite City, R. R.	11.50-12.00
Granite City, No. 2	9.50-10.00
N. Y., deal. No. 2	7.50- 7.75
N. Y., deal. barge (No. 1 for export)	9.25
Pitts., No. 1 (R. R.)	14.75-15.25
Pitts., No. 1 (dlr.)	14.25-14.75
Pittsburgh, No. 2	13.00-13.50
St. Louis	9.50-10.00
Toronto, dealers	8.00
Valleys, No. 1	14.00-14.50

COMPRESSED SHEETS

Buffalo, dealers	11.00-11.50
Chicago, factory	12.00-12.50
Chicago, dealer	11.50-12.00
Cleveland	13.00-13.50
Detroit	10.75-11.25
E. Pa., new mat.	11.50-12.00
Pittsburgh	14.50-15.00
St. Louis	8.75- 9.25
Valleys	13.25-13.75

BUNDLED SHEETS

Buffalo	9.50-10.00
Cincinnati, del.	8.00- 8.50
Cleveland	9.75-10.25
Pittsburgh	13.00-13.50
St. Louis	6.00- 6.50
Toronto, dealers	5.00

SHEET CLIPPINGS, LOOSE

Chicago	7.50- 8.00
Cincinnati	7.50- 8.00
Detroit	7.75- 8.25
St. Louis	5.50- 6.00

STEEL RAILS, SHORT

Birmingham	12.50-13.00
Buffalo	15.00-15.50
Chicago (3 ft.)	14.50-15.00
Chicago (2 ft.)	15.50-16.00
Cincinnati, del.	14.00-14.50
Detroit	13.50-14.00
Pitts., open-hearth, 3 ft. and less	15.25-15.75
St. Louis, 2 ft. & less	14.00-14.50

STEEL RAILS, SCRAP

Boston	8.00- 8.25
Chicago	13.50-14.00
Pittsburgh	14.50-15.00
St. Louis	11.75-12.25
Buffalo	12.25-12.75
Toronto, dealers	9.00

STOVE PLATE

Birmingham	7.00- 7.50
Boston, dealers	4.75- 5.00
Buffalo	10.25-10.75
Chicago	7.50- 8.00
Cincinnati, dealers	7.50- 8.00
Detroit, net	8.00- 8.50
Eastern Pa.	10.00-10.50
N. Y., deal. fdry.	6.50- 7.00
St. Louis	7.00- 7.50
Toronto, dealers	7.50

COUPLERS, SPRINGS

Buffalo	14.50-15.00
Chicago, springs	14.50-15.00
Eastern Pa.	15.50-16.00
Pittsburgh	17.00-17.50
St. Louis	12.00-12.50

ANGLE BARS—STEEL

Chicago	14.50-15.00
St. Louis	12.25-12.75
Buffalo	14.50-15.00

RAILROAD SPECIALTIES

Chicago	14.50-15.00

LOW PHOSPHORUS

Buffalo, billet and bloom crops	14.50-15.00
Cleveland, billet, bloom crops	16.00-16.50
Eastern Pa., crops	16.00
Pittsburgh, billet bloom crops	17.25-17.75
Pittsburgh, sheet bar crops	16.00-16.50

FROGS, SWITCHES

Chicago	13.50-14.00
St. Louis, cut	11.75-12.25

SHOVELING STEEL

Chicago	13.25-13.75
Federal, Ill.	10.50-11.00
Granite City, Ill.	9.50-10.00
Toronto, dealers	5.00

RAILROAD WROUGHT

Birmingham	7.50- 8.00
Boston, dealers	6.00- 6.50
Buffalo, No. 1	11.00-11.50
Buffalo, No. 2	12.25-12.75
Chicago, No. 1, net	12.00-12.50
Chicago, No. 2	13.25-13.75
Cincinnati, No. 2	11.00-11.50
Eastern Pa.	12.50
N. Y., No. 1 deal.	9.50-10.00
St. Louis, No. 1	10.00-10.50
St. Louis, No. 2	11.25-11.75
Toronto, No. 1, dlr.	6.00

SPECIFICATION PIPE

Eastern Pa.	11.50
New York, dealers	6.75- 7.25

BUSHELING

Buffalo, No. 1	11.00-11.50
Chicago, No. 1	12.00-12.50
Cinci., No. 1, deal.	8.00- 8.50
Cincinnati, No. 2	5.00- 5.50
Cleveland, No. 2	8.25- 8.75
Detroit, No. 1, new	9.75-10.25
Valleys, new, No. 1	13.25-13.75
Toronto, dealers	5.00

MACHINE TURNINGS

Birmingham	6.00- 7.00
Boston, dealers	3.50- 3.75
Buffalo	5.75- 6.25
Chicago	6.50- 7.00
Cincinnati, dealers	6.00- 6.50
Cleveland	7.50- 8.00
Detroit	5.75- 6.25
Eastern Pa.	8.00
New York, dealers	4.00- 4.50
Pittsburgh	10.00-10.50
St. Louis	4.00- 4.50
Toronto, dealers	3.50
Valleys	9.50-10.00

BORINGS AND TURNINGS

For Blast Furnace Use

Boston, dealers	2.50- 2.75
Buffalo	7.75- 8.25
Cincinnati, dealers	5.50- 6.00
Cleveland	8.25- 8.75
Detroit	5.75- 6.25
Eastern Pa.	6.25- 6.50
New York, dealers	3.25- 3.75
Pittsburgh	9.00- 9.50
Toronto, dealers	4.00

CAST IRON BORINGS

Birmingham, plain	5.00- 6.00
Boston, chemical	5.50- 6.50
Boston, dealers	3.25- 3.50
Buffalo	7.75- 8.25
Chicago	6.00- 6.50
Cincinnati, dealers	5.50- 6.00
Cleveland	8.25- 8.75
Detroit	5.75- 6.25
E. Pa., chemical	10.00-12.00
New York, dealers	3.50- 4.00
St. Louis	4.50- 5.00
Toronto, dealers	4.50

PIPE AND FLUES

Cincinnati, dealers	7.50- 8.00

RAILROAD GRATE BARS

Buffalo	9.50-10.00
Chicago, net	7.75- 8.25
Cincinnati	6.00- 6.50
Eastern Pa.	9.50-10.00
New York, dealers	5.75- 6.25
St. Louis	7.50- 8.00

FORGE FLASHINGS

Boston, dealers	6.75- 7.00
Buffalo	11.00-11.50
Cleveland	11.50-12.00
Detroit	9.50-10.00
Pittsburgh	13.00-13.50

FORGE SCRAP

Boston, dealers	4.50- 5.00
Chicago, heavy	14.50-15.00
Eastern Pa.	11.50-12.00

ARCH BARS, TRANSOMS

St. Louis	12.25-12.75

AXLE TURNINGS

Boston, dealers	3.75- 4.25
Buffalo	10.50-11.00
Chicago, elec. fur.	13.00-13.50
Eastern Pa.	11.50
St. Louis	9.00- 9.50
Toronto	4.50

STEEL CAR AXLES

Birmingham	12.00-12.50
Boston, ship. point	11.00-11.25
Buffalo	14.50-15.00
Chicago, net	14.50-15.00
Eastern Pa.	17.00
St. Louis	12.75-13.25
Toronto	8.00

SHAFTING

Boston, ship. point	13.25-13.50
Eastern Pa.	18.50
New York, dealers	13.50-14.00
St. Louis	13.00-13.50

CAR WHEELS

Birmingham	10.00-11.00
Boston, iron deal.	7.75- 8.00
Buffalo, iron	12.00-12.50
Buffalo, steel	14.50-15.00
Chicago, iron	13.50-14.00
Chicago, rolled steel	14.50-15.00
Cincinnati, iron	11.00-11.50
Eastern Pa., iron	13.50-14.00
Eastern Pa., steel	16.00
Pittsburgh, iron	14.25-14.75
Pittsburgh, steel	16.25-16.75
St. Louis, iron	10.50-11.00
St. Louis, steel	12.00-12.50
Toronto, net	7.00

NO. 1 CAST SCRAP

Birmingham	11.00-12.00
Boston, No. 1 mach.	9.00- 9.25
Boston, No. 2	8.50- 8.75
Boston, tex. con.	8.50- 9.00
Buffalo, cupola	11.50-12.00
Buffalo, mach.	12.50-13.00
Chicago, agri. net	10.00-10.50
Chicago, auto	11.00-11.50
Chicago, mach. net	12.00-12.50
Chicago, railr'd net	10.50-11.00
Cinci., mach. cup	10.50-11.00
Cleveland, mach.	14.25-14.75
Detroit, auto, net	11.50-12.00
Eastern Pa., cupola	12.50-13.00
E. Pa., mixed yard	10.50
Pittsburgh, cupola	13.50-14.00
San Francisco, del.	13.50-14.00
Seattle	7.50- 9.00
St. Louis, No. 1	11.00-11.50
St. L., No. 1 mach.	12.50-13.00
Toronto, No. 1, mach., net	8.50

HEAVY CAST

Boston, del.	6.75- 7.00
Buffalo, break.	10.25-10.75
Cleveland, break.	11.50-12.00
Detroit, No. 1 mach. net	11.50-12.00
Detroit, break.	9.50-10.00
Detroit, auto net	11.50-12.00
Eastern Pa.	12.50
N. Y., break. deal.	8.00- 8.25
Pittsburgh	12.50-13.00

MALLEABLE

Birmingham, R. R.	11.50-12.50
Boston, consum.	13.50-14.50
Buffalo	15.00-15.50
Chicago, R. R.	16.00-16.50
Cincinnati, agri. del.	12.50-13.00
Cleveland, rail	16.50-17.00
Detroit, auto, net	13.50-14.00
Eastern Pa., R. R.	15.50-16.00
Pittsburgh, rail	16.75-17.25
St. Louis, R. R.	13.75-14.25
Toronto, net	7.00

RAILS FOR ROLLING

5 feet and over

Birmingham	11.50-12.00
Boston, dealers	8.00- 8.50
Buffalo	12.25-12.75
Chicago	14.00-14.50
Eastern Pa.	13.00-14.00
New York, dealer	9.75-10.25
St. Louis	13.50-14.00

LOCOMOTIVE TIRES

Chicago (cut)	15.00-15.50
St. Louis, No. 1	11.75-12.25

LOW PHOS. PUNCHINGS

Buffalo	14.50-15.00
Chicago	15.00-15.50
Eastern Pa.	15.00-15.50
Pittsburgh (heavy)	16.50-17.00
Pittsburgh (light)	15.75-16.25

Iron Ore

Lake Superior Ore

Gross ton, 51½% Lower Lake Ports

Old range bessemer	$4.80
Mesabi nonbess.	4.50
High phosphorus	4.40
Mesabi bessemer	4.65
Old range nonbess.	4.65

Eastern Local Ore

Cents, unit, del. E. Pa.

Foundry and basic 56-63% con. (nom.)	8.00- 9.00
Cop.-free low phos. 58-60% (nom.)	10.00-10.50

Foreign Ore

Cents per unit, f.a.s. Atlantic ports (nominal)

Foreign manganiferous ore, 45.55% iron, 6-10% man.	10.50
No. Afr. low phos.	10.50
Swedish basic, 65%	9.50
Swedish low phos.	10.50
Spanish No. Africa basic, 50 to 60%	10.50
Tungsten, spot sh. ton unit, duty pd.	$15.85-16.00
N. F., fdy., 55%	7.00
Chrome ore, 48% gross ton, c.i.f.	19.25

Manganese Ore

(Nominal)

Prices not including duty, cents per unit cargo lots

Caucasian, 52-55%	26.00
So. African, 52%	26.00
So. Afr., 49-51%	24.00
Indian, 58-60%	nominal
Indian, 48-50%	nominal

Warehouse Iron and Steel Prices

Cents per pound for delivery within metropolitan districts of cities specified

STEEL BARS

Baltimore*	3.00c
Boston††	3.10c
Buffalo	3.00c
Chattanooga	3.36c
Chicago (j)	3.00c
Cincinnati	3.22c
Cleveland	3.00c
Detroit	3.09c
Houston	3.00c
Los Angeles	3.60c
Milwaukee	3.11c-3.26c
New Orleans	3.35c
New York‡ (d)	3.31c
Pitts. (h)	2.95c-3.10c
Philadelphia*	3.03c
Portland	3.50c
San Francisco	3.25c
Seattle	3.70c
St. Louis	3.25c
St. Paul	3.25c-3.40c
Tulsa	3.25c

IRON BARS

Portland	3.40c
Chattanooga	3.36c
Baltimore*	3.05c
Chicago	2.75c
Cincinnati	3.22c
New York‡(d)	3.36c
Philadelphia*	2.93c
St. Louis	3.25c
Tulsa	3.25c

REINFORCING BARS

Buffalo	2.60c
Chattanooga	3.36c
Chicago	2.10c-2.60c
Cleveland (c)	2.10c
Cincinnati	3.25c
Houston	3.25c
Los Ang., cl.	2.45c
New Orleans	3.50c
Pitts., plain (h)	3.05c
Pitts., twisted squares (h)	3.175c
San Francisco	2.45c
Seattle	2.45c
St. Louis	3.25c
Tulsa	3.25c
Young.	2.30c-2.60c

SHAPES

Baltimore*	3.00c
Boston††	3.19c
Buffalo	3.25c
Chattanooga	3.56c
Chicago	3.20c
Cincinnati	3.42c
Cleveland	3.31c
Detroit	3.42c
Houston	3.00c
Los Angeles	3.60c
Milwaukee	3.31c
New Orleans	3.55c
New York‡(d)	3.37c
Philadelphia*	2.98c
Pittsburgh (h)	3.15c
Portland (i)	3.50c
San Francisco	3.25c
Seattle (i)	3.70c
St. Louis	3.45c
St. Paul	3.45c
Tulsa	3.50c

PLATES

Baltimore*	3.00c
Boston††	3.21c
Buffalo	3.37c
Chattanooga	3.56c
Chicago	3.20c
Cincinnati	3.42c
Cleveland, ¼-in. and over	3.31c
Detroit	3.42c
Detroit, ⅜-in.	3.65c
Houston	3.00c
Los Angeles	3.60c
Milwaukee	3.31c
New Orleans	3.55c
New York‡(d)	3.40c
Philadelphia*	2.98c
Phila. floor	4.95c
Pittsburgh (h)	3.15c
Portland	3.35c
San Francisco	3.25c
Seattle	3.55c
St. Louis	3.45c
St. Paul	3.45c
Tulsa	3.50c

NO. 10 BLUE

Baltimore*	3.10c
Boston††	3.30c
Buffalo	3.62c
Chattanooga	3.36c
Chicago	3.05c
Cincinnati	3.22c
Cleveland	3.11c
Det., 8-10 ga.	3.14c
Houston	3.35c
Los Angeles	3.75c
Milwaukee	3.16c
New Orleans	3.55c
New York‡(d)	3.31c
Portland	3.75c
Philadelphia*	3.08c
Pittsburgh (h)	2.95c
San Fracisco	3.35c
Seattle	3.70c
St. Louis	3.45c
St. Paul	3.30c
Tulsa	3.70c

NO. 24 BLACK

Baltimore*†	3.60c
Boston (g)	3.95c
Buffalo	3.25c
Chattanooga	4.16c
Chicago	3.85c
Cincinnati	4.02c
Cleveland	3.91c
Detroit	3.94c
Los Angeles	4.35c
Milwaukee	3.96c
New Orleans	4.50c
New York‡(d)	3.89c
Philadelphia*†	3.60c
Pitts.** (h)	3.55c
Portland	4.40c
San Francisco	4.00c
Seattle	4.40c
St. Louis	4.10c
St. Paul	3.90c
Tulsa	4.75c

NO. 24 GALV. SHEETS

Baltimore*†	4.30c
Buffalo	4.00c
Boston (g)	4.65c
Chattanooga	4.86c
Chicago (h)	4.55c
Cincinnati	4.72c
Cleveland	4.61c
Detroit	4.72c
Houston	4.40c
Los Angeles	4.95c
Milwaukee	4.66c
New Orleans	4.95c
New York‡(d)	4.30c
Philadelphia*†	4.40c
Pitts.**(h)	4.15-4.45c
Portland	5.00c
San Francisco	4.50c
Seattle	5.00c
St. Louis	4.65c
St. Paul	4.50c
Tulsa	5.10c

BANDS

Baltimore*	3.20c
Boston††	3.30c
Buffalo	3.42c
Chattanooga	3.61c
Chicago	3.30c
Cincinnati	3.47c
Cleveland	3.36c
Detroit, ⅜-in. and lighter	3.39c
Houston	3.25c
Los Angeles	4.10c
Milwaukee	3.41c
New Orleans	3.95c
New York‡(d)	3.56c
Philadelphia	3.18c
Pittsburgh (h)	3.20c
Portland	4.25c
San Francisco	4.10c
Seattle	4.25c
St. Louis	3.55c
St. Paul	3.55c
Tulsa	3.45c

HOOPS

Baltimore	2.30c
Boston††	4.30c
Buffalo	3.42c
Chicago	3.30c
Cincinnati	3.47c
Det., No. 14 and lighter	3.39c
Los Angeles	5.85c
Milwaukee	3.41c
New York‡(d)	3.56c
Philadelphia	3.43c
Pittsburgh (h)	3.70c
Portland	5.60c
San Francisco	6.15c
Seattle	5.60c
St. Louis	3.55c
St. Paul	3.55c

COLD FIN. STEEL

Baltimore (c)	3.73c
Boston	3.90c
Buffalo (h)	3.55c
Chattanooga*	4.13c
Chicago (h)	3.50c
Cincinnati	3.72c
Cleveland (h)	3.50c
Detroit	3.79c
Los Ang. (f) (d)	5.85c
Milwaukee	3.61c
New Orleans	4.30c
New York‡(d)	3.81c
Philadelphia	3.76c
Pittsburgh	3.50c
Portland (f) (d)	6.15c
San Fran.(f) (d)	5.95c
Seattle (f) (d)	6.15c
St. Louis	3.75c
St. Paul	4.02c
Tulsa	4.65c

COLD ROLLED STRIP

Boston, 0.100-in., 500 lb. lots	3.245c
Buffalo	3.39c
Chicago	3.27c
Cincinnati (b)	3.22c
Cleveland (b)	3.20c
Detroit	3.33c
New York‡(d)	3.36c
St. Louis	3.45c

TOOL STEELS

(Applying on or east of Mississippi river; west of Mississippi 1c up)

	Base
High speed	57c
High carbon, high chrome	37c
Oil hardening	22c
Special tool	20c
Extra tool	17c
Regular tool	14c

Uniform extras apply.

BOLTS AND NUTS

(100 pounds or over)

	Discount
Chicago (a)	70
Cleveland	70
Detroit	70-10
Milwaukee	70
Pittsburgh	70

(a) Under 100 pounds, 65 off.

(b) Plus straightening, cutting and quantity differentials; (c) Plus mill, size and quantity extras; (d) Quantity base; (e) New mill classif. (f) Rounds only; (g) 50 bundles or over; (h) Outside delivery, 10c less; (i) Under 3 in.; (j) shapes other than rounds, flats, fillet angles, 3.15c.

‡Domestic steel; *Plus quan. extras; **Under 25 bundles; *†50 or more bundles; † New extras apply; ††Base 40,000 lbs., extras on less.

Prices on heavier lines are subject to new quantity differentials; 399 lbs. and less, up 50 cts.; 400 to 9999 lbs., base; 10,000 to 19,999 lbs., 15 cts. under; 20,000 to 39,999 lbs., 25 cts. under; 40,000 lbs. and over, 35 cts. under base.

Current Iron and Steel Prices of Europe

Dollars at Rates of Exchange, Jan. 30

Export Prices f. o. b. Ship at Port of Dispatch—(By Cable or Radio)

	British gross tons U. K. ports £ s d	Continental Channel or North Sea ports, metric tons Quoted in dollars at current value	**Quoted in gold pounds sterling £ s d
PIG IRON			
Foundry, 2.50-3.00 Silicon	$15.60 3 2 6	$13.39	1 13 0
Basic bessemer	15.60 3 2 6*	12.33	1 10 0
Hematite, Phos. .03-.05	16.25 3 5 0		
SEMIFINISHED STEEL			
Billets	$27.50 5 10 0	$19.02	2 7 0
Wire rods, No. 5 gage	42.50 8 10 0	36.44	4 10 0
FINISHED STEEL			
Standard rails	$41.25 8 5 0	$44.53	5 19 0
Merchant bars	1.67c 7 10 0	1.15c to 1.20c	3 2 6 to 3 5 0
Structural shapes	1.67c 7 10 0	1.14c	3 1 6
Plates, ¼ in. or 5 mm.	1.79c 8 1 3	1.56c	4 5 0
Sheets, black, 24 gage or 0.5 mm.	2.17c 9 15 0	2.13c	5 16 0††
Sheets, gal., 24 gage, corr.	2.62c 11 15 0	2.28c	6 5 0
Bands and strips	1.89c 8 10 0	1.46c	4 0 0
Plain wire, base	2.07c 9 5 0	1.76c	5 5 0
Galvanized wire, base	2.39c 10 15 0	2.15c	5 17 6
Wire nails, base	2.67c 12 0 0	1.75c	4 15 0
Tin plate, box 108 lbs.	$ 4.69 0 18 9		

British ferromanganese $75 delivered Atlantic seaboard, duty-paid. German ferromanganese £9 0s 0d $(43.74) f.o.b.

Domestic Prices at Works or Furnace—Last Reported

	£ s d	French Francs		Belgian Francs		Reich Marks
Fdy. pig iron, Si. 2.5	$17.50 3 10 0(a)	$17.13	260	$13.13	385	$25.66 63
Basic bessemer pig iron	17.50 3 10 0(a)	12.52	190	11.94	350	28.31(b) 69.50
Furnace coke	4.87 0 19 6	6.26	95	4.16	122	7.74 19
Billets	27.50 5 10 0	28.34	430	18.61	540	39.31 96.50
Standard rails	2.21c 8 5 0	2.00c	671	1.70c	1,100	2.63c 132
Merchant bars	2.31c 8 12 0	1.68c	560	.92c	600	2.19c 110
Structural shapes	2.34c 8 15 0	1.65c	550	.92c	600	1.97c 107
Plates, ¼-in. or 5 mm.	2.43c 9 1 3	2.10c	700	1.07c	700	2.32c 127
Sheets, black	3.09c 11 10 0§	1.80c	600‡	1.26c	825‡	2.67c 144‡
Sheets, galv., corr., 24 ga. or 0.5 mm.	3.62c 13 10 0	2.85c	950	2.30c	1,500	6.78c 370
Plain wire	2.49c 9 5 0	2.64c	900	1.77c	1,150	3.17c 173
Bands and strips	2.52c 9 7 0	1.95c	650	2.71c	800	2.32c 127

*Basic. †British ship-plates. Continental, bridge plates. §24 ga. ‡1 to 3 mm. basic price. British quotations are for basic open-hearth steel. Continent usually for basic-bessemer steel. a del. Middlesbrough. b hematite. ††Close annealed.

**Gold pound sterling carries a premium of 66.25 per cent over paper sterling.

Bars

Bar Prices, Page 72

Pittsburgh—Bars recently awarded for repairs to old and construction of new rolling stock have been a market high-light in view of the declining position the automobile industry has assumed. Consequently, more bar specifications are running to carbon grades, a condition which is increased by the dominant share reinforcing bars are taking in the output of bar mills. The carbon bar market at 1.85c, base, Pittsburgh, is holding fairly firm and without quotable change.

Cleveland—Bar specifications showed a slight increase during the week, with the improvement mainly from manufacturers of agricultural implements, power shovels and miscellaneous consumers. Tonnage from automobile manufacturers was unchanged in volume, but less than received from the implement industry. Automobile forge shops continue on slackened schedules, many operating only three days a week. Some specifications were received from Willys-Overland, Toledo, recently authorized by court to build 15,000 cars. Prices are steady.

Chicago—Bar demand is well maintained in most directions. Recent decrease in automotive releases has tended to level off, while minor gains are noted in requirements of some miscellaneous consumers. Farm implement manufacturers hold to a steady and active rate of consumption, as also do some machinery builders. Prices are firm.

New York—Commercial bar tonnage is stimulated by good specifications from nut and bolt manufacturers and railroads. Shipyard demand also is fair. Prices are steady.

Philadelphia—While commercial bar specifications since the first of the year have been fair, with shipyards, bolt and nut makers and railroads principally active and with some good specifications coming out from cold finishers, the situation over the past 10 days has slowed, according to leading sellers. Meanwhile, prices are steady at 1.85c, Pittsburgh, or 2.16c, Philadelphia.

Cold Finished

Cold Finished Prices, Page 73

Pittsburgh—Cold-finished steel bar shipments for January equaled those of December but specifications were from 20 to 30 per cent less. Thus a quiet condition in shipments will exist in February. Automotive buying is at a diminished rate but miscellaneous specifications for cold-drawn material are well sustained. The market is quoted at 2.10c, base, Pittsburgh.

Plates

Plate Prices, Page 72

Pittsburgh—Pittsburgh Coal Co. here closed bids Jan. 27 on a readvertisement of ten standard coal barges, involving about 1400 tons of plates and structural shapes. The barges, first inquired for late in December, were redesigned on an all-welded basis. No award has been announced yet. River barge buying is quiet and the only other recent private contract has been International Petroleum Corp.'s order for three oil barges, 400 tons of plates, to Marietta Mfg. Co. Severe cold weather on the rivers in this district unquestionably forecasts a large number of barge repairs, owing to ice damage. Among government in-

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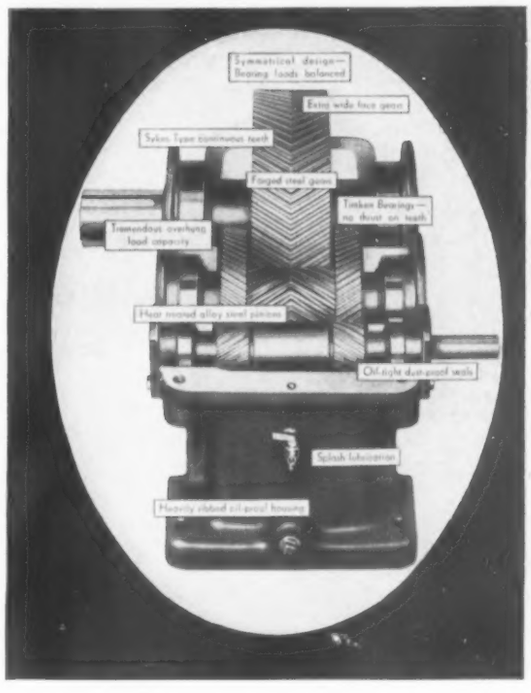
RUGGED

all the

way through



The features shown in the double reduction Horsburgh & Scott Herringbone Speed Reducer illustrated are found also in the single and triple reduction Herringbone units. All gears are Sykes type continuous tooth Herringbone . . . the most accurate Herringbone gears it is possible to produce.

Extreme accuracy, herringbone tooth design, and the locking of gears between oversize Timken Roller Bearings insure quiet, smooth operation.

Horsburgh & Scott Herringbone Speed Reducers bring maintenance cost close to the zero point. Their depreciation is exceedingly low, even under very heavy shock loads and other difficult conditions of service.

Send for catalog of our complete line.

THE HORSBURGH & SCOTT CO.

GEARS AND SPEED REDUCERS

5112 HAMILTON AVENUE, CLEVELAND, OHIO, U. S. A.

quiries at present is a whirler derrick for Chicago, Feb. 3, and bids have been recently closed on from one to four 126-foot barges for the Tennessee Valley authority, Knoxville, Tenn., and a derrick hull for the Vicksburg, Miss., engineers. Plates remain 1.80c, Pittsburgh.

New York — Plate demand is spotty, with railroad, ship and oil company tonnage the bright spots. No important tonnage for oil companies has been awarded since the recent 6000 tons placed for an Italian plant of Socony-Vacuum Oil Co. Substantial tonnage of plates is pending for a New York Edison Co. development along the East river. Bids will be opened Feb. 3 by the city water department on a fair sized tonnage of 48 and 60-inch pipe. Plate tonnage also is pending for three trawlers for the coastguard.

Philadelphia—Plate tonnage continues spotty, although early distribution is expected of ship work previously noted pending. The outlook with regard to ship tonnage is further enhanced by the placing of two tankers by the Gulf Refining Co. with the Bethlehem Shipbuilding Corp. Shipbuilding activities will be resumed for the first time in two years at Sparrows Point, Md. to handle this contract. Approximately 10,000 tons of hull steel will be required. Sun Shipbuilding Corp., Chester, Pa., is reported low on two cargo passenger boats for American-South African Steamship Lines Inc., New York. About 10,000 tons will be needed for these boats, should work go ahead. Tank work includes the placing of the fabrication contract for a tank at the Carlisle, Pa., barracks with Tippet & Wood, Phillipsburg, N. J. The Atlantic Refining Co., Philadelphia, has placed contracts for its development at Atreco, Texas; most of the plate tonnage, however, will be placed through the M. W. Kellogg Co., Jersey City, N. J., fabricator, it is said. Plate prices are generally held at 1.90c, Coatesville, Pa., or 1.99½c, Philadelphia.

Cleveland—The market continues quiet, with few carload orders from tank and boiler interests. The Erie railroad's inquiry for freight cars, expected shortly, will call for 800 units, 300 of which will be automobile cars. Plate demand from railroads for repair and new construction work here is light.

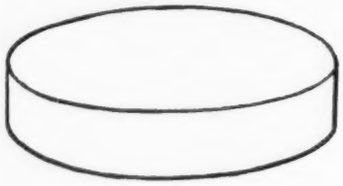
Chicago—Plate orders of moderate size are being received for railroad and tank work. Improvement in demand from both sources is in prospect in view of plans of railroads for equipment building and repairs. Industrial tank work also is expected to increase during coming months, with oil companies counted on for fair orders for fabricated plates.

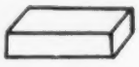
San Francisco—The only plate award of size went to unnamed interests, 125 tons for a 10-inch welded steel pipe line for the treasury department at Fresno, Calif. So far this year 34,861 tons have been booked, compared with only 6885 tons for the same period a year ago. The Crystal Springs and Lagunda Honda pipe line for San Francisco, up for figures Feb. 5, will require 4400 tons for a 60-inch welded steel pipe line. The following day the same city will take bids on 375 tons for a 20-inch welded steel pipe line.

Seattle—Large projects are few in this area although there is a fair run of small tank and pipe work. Unstated interests are building a 35,000-barrel fuel oil tank for the Grays Harbor Pulp & Paper Co., East Hoquiam, Wash. requiring 280 tons of plates. Commercial Iron Works, Portland, Oreg., is low for repairs to the army dredge Col. P. S. Michie, calling for unstated tonnages. King Bros., Portland, are low on construction of a gas holder for the Yakima, Wash., disposal plant.

Contracts Placed

400 tons, three oil barges for International Petroleum Corp., to Marl-



This round slug left a round hole - a simple perforation. It might have been a square or a rectangle  or a triangle or an oblong and still be no more than a simple slug that left a simple hole.

The business of perforating - of making holes in things - is not a highly complicated one. It is, in fact, essentially simple, and it is important for that reason that we give our strictest attention to those few things that mean success to us. We watch our raw materials carefully, (Sheet Aluminum, Brass, Copper, Steel, Tin, and Zinc) and we maintain them in adequate stocks. We train and hold a faithful personnel. And to them the word SERVICE amounts to a sort of Commercial Diety.

Ask us for samples - any kind.

ERDLE PERFORATING COMPANY

171 York Street, Rochester, N. Y.

etta Mfg. Co., Point Pleasant, W. Va.

280 tons, fuel oil tank for Grays Harbor Pulp & Paper Co., East Hoquiam, Wash., to unstated interest.

125 tons, 10-inch welded steel pipe, treasury department, Fresno, Calif., to unnamed interest.

Contracts Pending

4400 tons, 60-inch welded steel pipe, San Francisco; bids Feb. 5.

375 tons, 20-inch welded steel pipe, San Francisco; bids Feb. 6.

Unstated, repairs to army dredge COL. P. S. MICHIE, Portland, Oreg.; Commercial Iron Works, Portland, low.

Sheets

Sheet Prices, Page 72

Pittsburgh—After three weeks of declining specifications, last week's new business in the sheet market was encouragingly better. Nonetheless, January's specifications were 20 to 30 per cent less than those of December. A cut-back of 40 per cent has been adopted by a leading low-priced carmaker for February, making a decline from 100,000 to 60,000 units for assembly. Pittsburgh base prices on sheets are steady. Producers are attempting to eliminate the $3 a ton concession on large lots in the Detroit district, and probably will announce higher prices for this district for effect with the second quarter.

Cleveland—Moderate improvement in buying by some automobile manufacturers and partsmakers is believed to be the forerunner of more substantial orders this month. Mills continue operating on a hand to mouth basis. Specifications from refrigerator manufacturers are larger, with the approach of the spring production season. Releases from makers of washing machines and stoves are fair.

Chicago—Sheet business continues below the volume of a month ago, though the decline in automotive releases is less pronounced. Demand from other consumers is holding well, with gains noted in some directions. Manufacturers of steel shelving and lockers are more active, while a steady movement continues through jobbers. Sheet producers anticipate a pick-up in automotive buying in about 30 days.

New York—Sheet tonnage continues slow, cold weather retarding building operations. Mills have substantial stocks against orders placed in the closing weeks of 1935 and held up when it became apparent there would be no price advances. Prices are fairly steady.

Philadelphia—Miscellaneous sheet specifications so far this year have fallen short of trade expectations, although distribution for the Pennsylvania car program has maintained bookings in substantial amount. Sellers look for improvement in general buying, with March probably the most active month this quarter, provided the market reflects strength. Allegheny Steel Co., Pittsburgh, booked all of the stainless steel requirements of the two Burlington streamlined trains to be built by the Edward G. Budd Mfg. Co., it is understood here. This business totals 350 tons.

Buffalo—The Seneca works of the Bethlehem Steel Co. continues to operate at 90 per cent. The only statement that is made relative to output of the new strip mill at Lackawanna is that it is "increasing gradually."

Cincinnati—Orders for sheets are being taken steadily, now for quarter requirements instead of near requirements. Jobber, refrigerator and stove needs are steady, and rolling schedules are maintained at about 75 per cent.

Birmingham, Ala.—Continued activity is noted at the sheet mills of the Birmingham district and outlook considered bright for indefinite period. Developments at the Fairfield sheet mills will shortly be showing

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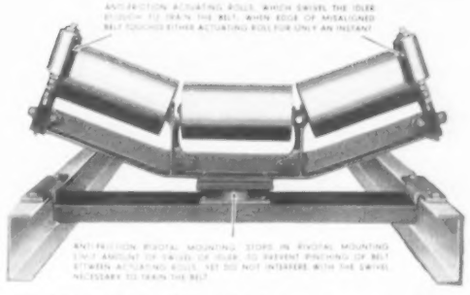
● This Link-Belt POSITIVE Self-Aligning Idler automatically and positively maintains troughed conveyor belts central at all times. It has met with unqualified success, and is preferred by many who have heretofore been using the counter-weighted disc type of self-aligning idler.

Either type is to be greatly preferred to using stationary "guide idlers," which do not correct or overcome belt misalignment, but merely restrain forcibly any further sidewise movement of the belt. For proper training, and longer life of the belt, use the pivoted self-aligning idler.



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progress, including rotary shears, small annealing furnaces, and other improvements.

St. Louis—Sheet producers and distributors report business spotty, both in new orders and specifications. Implement interests continue relatively the largest buyers. Miscellaneous requirements figure less conspicuously in current business.

Link-Belt Co., Chicago, has moved its district sales office in St. Louis from 3638 Olive street to larger quarters at 1018-21 Louderman building, 317 North Eleventh street, in order to handle increased business. Howard L. Purdon is district sales manager.

Transportation

Track Material Prices, Page 73

Further placing of rails is adding to mill backlogs as carriers complete their programs for 1936. Chicago & North Western has placed 35,000 tons with Carnegie-Illinois Steel Corp. in addition to the 16,000 tons recently awarded Inland Steel Co., Chicago.

Virginian has awarded 4100 tons of rails to Bethlehem Steel Co., Bethlehem, Pa., with accessories to be placed later. Atlantic Coast Line has let 6000 tons of rails for spring delivery to Tennessee Coal, Iron & Railroad Co., Birmingham, Ala. Of the recent award of 40,769 tons of rails to various makers 17,000 tons have been awarded to the Tennessee company. PWA has authorized a loan of $285,000 to the Kansas, Oklahoma & Gulf for purchase of 6752 tons of rails and fastenings.

Lehigh Valley has been awarded a loan of $1,755,000 to finance building 1000 coal cars in its own shops.

Erie is inquiring for 500 box cars and 300 automobile cars for which the interstate commerce has been asked permission to issue $2,200,000 in equipment trust certificates.

Chicago, Burlington & Quincy, which a short time ago placed two 10-car stainless steel passenger trains with Edward G. Budd Mfg. Co. for service between Chicago and Denver, has ordered two 7-car units for the Chicago-St. Paul-Minneapolis route. These trains will bring the Burlington's fleet of Zephyrs to eight.

The Wabash has been authorized by federal court to spend $476,694 for repairing 1310 freight cars. This road has placed orders for repair of 300 hopper cars, which will require about 2000 tons of steel.

Car Orders Placed

Chicago, Burlington & Quincy, two 7-car diesel-electric Zephyr trains to Edward G. Budd Mfg. Co., Philadelphia. These are in addition to two 10-car units placed a few weeks ago.

Rail Orders Placed

Atlantic Coast Line, 6000 tons, to Tennessee Coal, Iron & Railroad Co., Birmingham, Ala.

Chicago & North Western, 35,000 tons, to Carnegie-Illinois Steel Corp., Pittsburgh.

Virginian, 4100 tons of rails, to Bethlehem Steel Co., Bethlehem, Pa.; accessory distribution to be announced later.

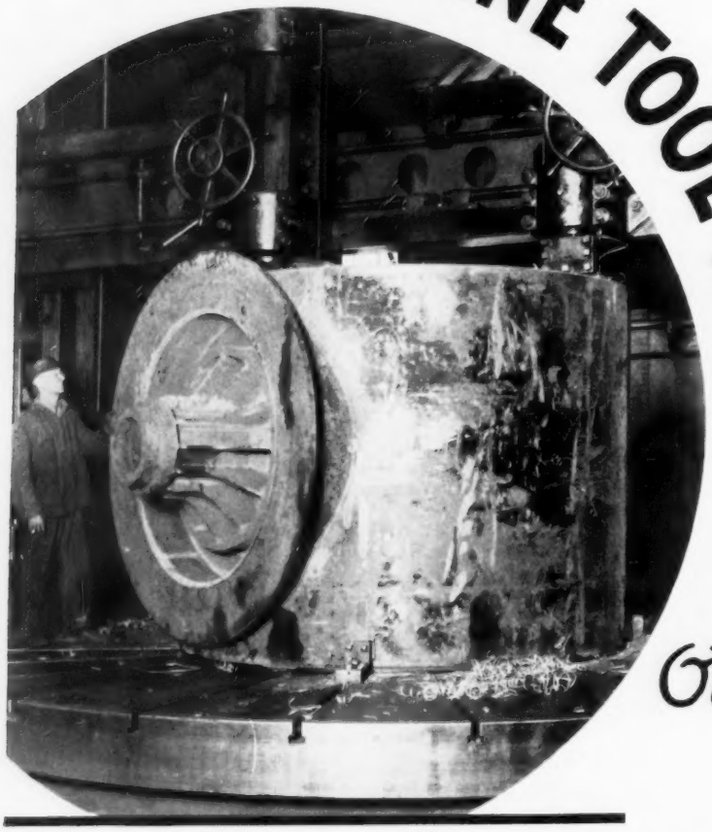
Car Orders Pending

Erie, 500 box and 300 automobile cars; permission asked to issue equipment trust certificates.

Buses Booked

American Car & Foundry Motors Co., New York: Twenty-six coaches for Southeastern Greyhound lines; four coaches for Boston Elevated Railway; two coaches for Transit Co. of Harrisburg; five coaches for Eastern Massachusetts Street Railway Co.; two coaches for Des Moines Railway Co.

MACHINE TOOL WORK *for Others*



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Pipe

Pipe Prices, Page 73

Pittsburgh—Steel pipe buying in January was at a level with that of December. Demand for seamless has been fair, and various small sizes of butt and lap weld grades are keeping at a steady pace. Fair tonnage of galvanized in small sizes is required to build the Pennsylvania railroad's 10,000 freight cars. With the approach of open weather it may be expected that several projects hanging fire will near the contract stage. Last week it was reported that East Texas Refining Co., Long View, Tex., was surveying a route for a crude oil line to the Rodessa, La., field; line to be about 45 miles in length.

Cleveland—Steel pipe orders are confined to small tonnages. Municipal water and sewage projects are slow in being released. Some slum elimination programs will be released soon.

Chicago—Orders for cast pipe are slow to be placed for work on which bids have been taken. Municipalities are placing little business except for construction involving WPA funds. Work of the latter type is proceeding steadily, though a number of PWA jobs on which new specifications have been drawn have yet to be started. Cicero, Ill., has taken bids on 7000 tons.

Continental Oil Co., Ponca City, Okla., has awarded contract to the Apex Construction Co., to oxy-acetylene weld 45 miles of 8-inch pipe line from Lake Charles to Basile, La., in conjunction with a previously reported 6-inch line. Both lines will be laid in the same ditch. Work began last week.

New York—Though there are no new awards of cast pipe of size, four large tonnages now actively pending aggregate 1250 tons. In addition there are quite a few small inquiries, notably from the procurement division, treasury department. All indications point to an expansion in buying with the approach of Spring and open weather. Prices are unchanged and fairly firm.

Prices to jobbers on welded steel pipe in carloads have been reduced by some mills 5 per cent, effective Jan. 28. This applies to standard welded and extra strong welded pipe from ⅛-inch to 3 inches in diameter, both black and galvanized. Lapwelded is not affected.

Philadelphia—Pipe and tubular business here reflects further improvement. Utilities are more active, with fairly large lots of pipe and tubes pending for the United Illuminating Co., Bridgeport, Conn., and the New York Edison Co., New York. Oil refinery tonnage includes material to be bought by the M. W. Kellogg Co., Jersey City, N. J., for the Atlantic Refining development in Texas. Columbia Gas & Electric Corp., according to reports, plans construction of a 300-mile gas pipe line to connect panhandle eastern pipe line companies transmission lines with the Detroit Gas Co. system. It is understood the pipe purchases will be made in Pittsburgh.

Buffalo—Outlook for cast iron and steel pipe sales is exceptionally good. Many waterworks extension programs are pending, while the nearby oil fields are showing unprecedented signs of development this year. Some natural gas main extension also is contemplated.

Birmingham, Ala.—Cast pipe production is estimated at above 50 per cent. PWA contracts are in small lots.

St. Louis—Plans for numerous small waterworks and sewage projects forecast better demand for pipe than has been evident in a number of years. Bids will be asked by the public service commission, St. Louis, Feb. 21, for pressure conduit No. 2, from Howard Bend to Stacy

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park, requiring about 17,357 feet of 60-inch welded steel pipe, and 29,400 feet of 60-inch, ½ inch thick, together with couplings. Estimated cost is $620,000.

San Francisco — While awards were not heavy last week, the aggregate tonnage booked so far this year is in excess of that for the corresponding period in 1935. American Cast Iron Pipe Co., Birmingham, Ala., is low on 670 tons of 4 and 6-inch pipe for Oakland, Calif. Bids have been opened on 749 tons for Antioch, Calif.

Seattle — Demand is less active than a month ago, but considerable tonnage is pending, awaiting PWA approval. In several instances, bids have exceeded funds available and are being reconsidered. Sumner, Wash., will receive bids Feb. 10 for 75 tons of 6, 8 and 14-inch cast pipe. Florence, Oreg., will call new bids soon for a $20,000 project, alternates for steel and wood.

Cast Pipe Placed

115 tons, 6 to 18 inches for Tacoma, Wash., to H. C. Purcell, Seattle, for United States Pipe & Foundry Co., Burlington, N. J.

Cast Pipe Pending

749 tons, 18-inch, Antioch, Calif.; bids opened.

670 tons, 4 and 6-inch, Oakland, Calif.; American Cast Iron Pipe Co., Birmingham, Ala., low.

400 tons, miscellaneous diameters, department of purchase, New York, bid opened Feb. 4.

400 tons, 4 and 6-inch, for Public Service Corp. of New Jersey, Newark, N. J.; bids opened.

300 tons, up to 30-inch, New York state transit commission, for grade crossing elimination in borough of Queens; bids opened.

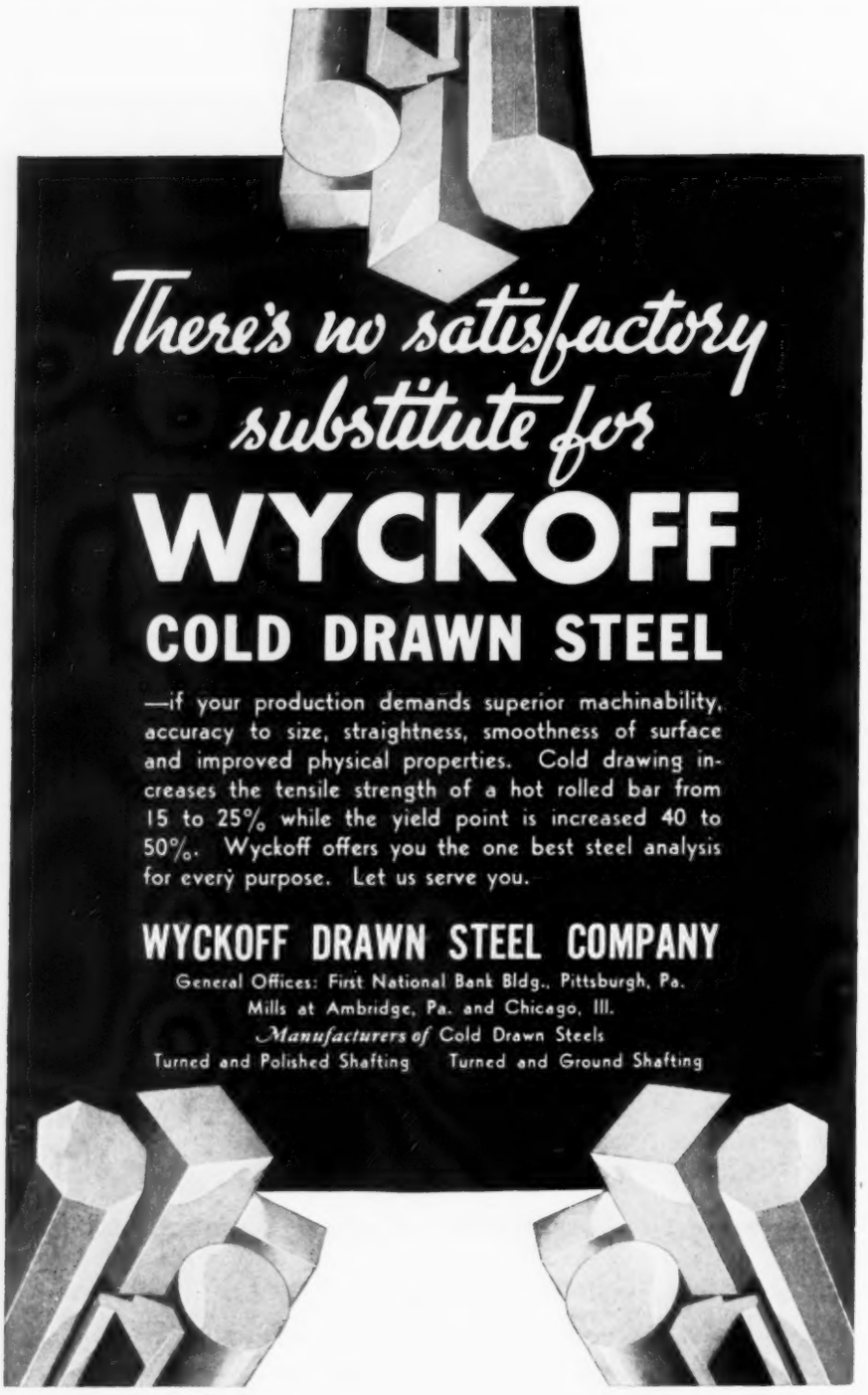
215 tons, 6 and 12-inch, Pearl Harbor, T. H., specification 8128; bids opened.

213 tons, 4 to 8-inch, Fresno county, California; Underground Construction Co., Fresno, low.

183 tons, 4 to 12-inch, Suisun, Calif.; bids opened.

150 tons, up to 20-inch, for work in Astoria, borough of Queens, New York; bids opened Feb. 3 by department of water supply, New York.

125 tons, 2-inch, Los Angeles, specification X-10; bids Feb. 4.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Wire

Wire Prices, Page 73

Pittsburgh—Prices on cut nails are being quoted unchanged as follows: $2.75 per keg for carload lots (with a 10 per cent discount on size extras), $3.05 for less-carload lots of five kegs or more, and $3.20 for lots of under five kegs. On both latter classifications no size extra discount is allowed. Standard and cement-coated wire nails are remaining at $2.40 per keg, base, Pittsburgh, with the usual $4 allowance named to jobbers on straight or mixed carloads. Buying of plain manufacturing wire is declining and the merchant wire market is not as active as six weeks to two month ago. Spring dating terms are now in effect on merchant items. Markets on plain manufacturing wire at 2.30c; spring wire, 2.90c, and woven wire fencing at $61 per base column are holding unchanged.

Cleveland—Demand shows little change, and prices are steady. Farm sales are being hampered by bad weather conditions.

Chicago—Wire demand continues somewhat irregular and January business showed less improvement over the rate a month ago than was indicated early in the period. A large portion of the recent decrease in demand has been due to lighter requirements of the automotive industry, since business from miscellaneous users of manufacturers' wire has been fairly steady. Demand for merchant products from distributors is slow to increase. Prices are steady.

Philadelphia—While manufactur-

ers' wire prices are steady, the market on merchant wire products has not fully recovered stability. Following relative steadiness earlier in the year, wire nails, for instance are again becoming unsettled in price in this district. Whether or not this is a temporary situation remains to be seen. As some fairly good specifications came out in the closing weeks of last year pending a scheduled increase, there is little buying power to support the existing market, it is pointed out. Along the southeastern seaboard prices on merchant wire products have been unsteady for a number of weeks.

Strip Steel

Strip Prices, Page 73

Pittsburgh — Buying of all grades of strip steel continued to decline last week and producers were working down backlogs when they operated at 50-55 per cent of capacity in both hot and cold mills. The chief cause for the market's inactivity is in curtailed automotive buying, and miscellaneous orders are sustaining the market. Strip continues at 1.85c, base, Pittsburgh, for hot rolled, and 2.60c, base, either Pittsburgh or Cleveland, for cold rolled.

Cleveland—Some additional orders have been placed by automobile parts makers, but the tonnage is relatively small, and mills have light backlogs. Demand from miscellaneous sources is fair.

Chicago — Recent decrease in automotive strip releases is less pronounced though the start of an upward movement is not looked for before the latter part of this month. Steady demand continues from miscellaneous consumers. Strip prices are fairly steady.

Philadelphia — Strip, along with other light flat-rolled products is moving rather slowly in this district. Improvement in miscellaneous buying noted a fortnight ago has subsided, consumers apparently having rounded out their stocks sufficiently following inventory period. Hot-rolled strip is still holding at 1.85c, Pittsburgh, or 2.16c, Philadelphia; and cold strip at 2.60c, or 2.91c.

Semifinished

Semifinished Prices, Page 73

Pittsburgh—A deadline of Feb. 15 has been established for a clean-up on semifinished steel shipments at the fourth quarter price, and the $2 a ton advance is still lacking test. The attitude of important billet and sheet bar buyers is a watchful waiting one. Most have increased their inventories of billets and sheet bars by 25 to 50 per cent more than they would normally carry. Nominally, billets, blooms and slabs are quoted $29, base, Pittsburgh; sheet bars, $30; and common wire rods, $40.

Tin Plate

Tin Plate Prices, Page 72

Pittsburgh — Tin plate demand from canmakers is sufficient to engage producers on the average of 60 per cent, which is unchanged from a week ago. However, the leading producer last week ran at slightly better than the average. Shipments are still proceeding slowly against heavy stocks which tin plate producers have on hand. Tin plate remains quoted at $5.25 per base box, Pittsburgh.

After an idleness of 18 months, mainly for extensive repairs and improvements, American Sheet & Tin Plate Co. will start 12 of its 20 mills here Feb. 3, with approximately 500 employes returning to work.

PAGE *for* **PRODUCTION**

● Production welding must be consistently good welding. . . . Page Welding Wires are consistently good wires. . . . They are processed to insure uniformity and for the particular type of welding for which they are recommended. . . . Each is shop tested, clearly marked, and all are conveniently packaged. . . . The Page Shielded Arc Welding Electrode is an all-'round type that may be used for flat, vertical and overhead welding. It is dense, high in tensile strength and in resistance to corrosion and impact. . . . It lowers production costs by permitting operators to produce smooth, uniform welds at high speed. . . . Under the Page name you have almost every type of welding wire demanded by present day requirements. . . . The Page Engineering Staff will cooperate with manufacturers as to the Page Wire best suited to their production requirements.

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Shapes

Structural Shape Prices, Page 72

New York—Award of 12,300 tons for the west side elevated highway here featured the structural shape market.

Due to sustained volume of business during the last quarter, bookings and shipments of fabricated structural steel during 1935 were maintained on practically the same volume as for the year previous, according to the American Institute of Steel Construction, New York. In December the industry was operating at 38.7 per cent of normal. During the last six months of 1935 the monthly operating capacity averaged 40.8 per cent.

Pittsburgh — American Bridge Co. has entered contracts for 1600 tons in pier No. 5 at South Boston, Mass., and between 2000 and 3000 tons for Union railroad bridges in the Pittsburgh district. Bidders are preparing for the 1200-ton Ohio state bridge at Elyria, O., to be bid this week. Bids were taken Jan. 31 by the state on 301,140 pounds of fabricated steel for a Mercer county grade crossing elimination.

Cleveland—Electro Metallurgical Sales Corp., New York, has awarded 1400 tons for a building at Alloy, W. Va. New inquiries are coming out slowly. Erie railroad is contemplating three bridge jobs requiring considerable tonnage.

Chicago — Larger orders are made up mainly of public projects. About 4000 tons is pending for bridge work in Illinois, Indiana and Wisconsin. Mill buildings for Wisconsin Steel Works involve 1500 tons. Specifications for plain shapes continue steady, with an increase indicated for the next several months.

Philadelphia — Awards include 500 tons for a hangar for the navy yard here and 220 tons for a school at Wymoning, Pa. Other awards have been small, although the placing of some fair sized school work is expected in the near future. Shape prices are unchanged at 1.90c, Bethlehem, Pa., or 2.01½c, Philadelphia.

Birmingham, Ala. — While several awards in smaller tonnages have been reported lately, fabricating shops are receiving contracts of larger size and building up a firm backlog. Operations of shops are steady. Ingalls Iron Works Co. is letting contract for new boat works on the Tennessee river at Decatur, Ala.

San Francisco—A fair tonnage of structural awards was placed, totaling over 1500 tons. Bids have been opened on 1295 tons of H-columns for foundations for the new civic center San Diego, Calif.

Seattle—Demand is confined mainly to bridge jobs, several important projects pending. Manson Construction & Engineering Co., Seattle, is low for the Swinomish Slough crossing, Skagit county, Washington. Award of 250 tons is pending. Oregon will open bids at Portland, Feb. 6 and 7, for 22 highway jobs including a 110-foot girder span and two I-beam bridges in Multnomah county.

Shape Contracts Placed

12,300 tons, west side elevated highway, Forty-sixth to Fifty-ninth streets, New York, to Harris Structural Steel Co., New York.

3000 tons, bridges for Union railroad.

Shape Awards Compared

	Tons
Week ended Feb. 3	26,510
Week ended Jan. 27	26,155
Week ended Jan. 20	26,841
This week, 1935	10,052
Weekly average, 1935	17,081
Weekly average, 1936	24,759
Weekly average, January	28,322
Total to date, 1935	65,289
Total to date, 1936	123,797

Behind the Scenes with STEEL

No Beard, No Vodka

MORNING mail brings word from Mr. Alfred Goldberg, Russian "rolling machines engineer" about whom we wrote here recently. Addressing us in English this time he protests our artist pulled a boner in sketching him with hirsute appendage and in the act of consuming Volga Vodka. Mr. G. says he is a "very young man" and does not drink Vodka "at all."

We have wrapped our artist, Mr. Etaoin, severely across the knuckles and cautioned him to be more careful.

We don't have a beard either, Mr. Goldberg, but we can use a little Vodka now and then. C'm up 'n' seeyus s'mtime.

* * *

Little Loco

ANOTHER letter deserves mention, this one from that well-known figure, "Constant Reader." He takes us (or rather our editors) to task as follows:

Dear SHRDLU:

Tut, tut! After all these years of reading *Iron Trade Review* and STEEL and finding them so accurate I had thought them infallible, here comes the Jan. 20 issue and there on Page 37 is one of the nicest little locomotives any fellow would want.

But here—its 250-pound tractive effort won't pull 5 tons up a 3 per cent grade. You pass this on to your V. P. in charge of slide rules, log tables and arithmetic and he will tell you it takes 20 pounds tractive effort to pull 1 ton up a 1 per cent grade, or 300 pounds to pull 5 tons up a 3 per cent grade, plus what it takes to pull the same train on level track. So 350 pounds would be a lot closer than 250 pounds.

Even with the little engine popping off, you will have to add to her tractive effort, unload part of the passengers and make 'em push or keep her off the grade. So what!

Well, we've investigated the matter and find that our usually accurate editors slipped on this one and accepted the word of Mr. Calvert Holt who wrote the article. When we asked our V. P. in charge of slide rules etc. about the matter, he whipped out four handbooks, a Monroe calculator, a log log slide rule and a bottle of Aspirin; after a brief interval he came up with the answer which checked the figures of Mr. Constant Reader.

Furthermore, what about wind resistance, slippery rails, wheel friction and stuff? For shame, editors and Mr. Holt. Where was youse educated anyhow?

* * *

Results Count

A MANUFACTURER of plate grips writes that he has received ten inquiries which mentioned seeing a description of the devices in STEEL (Dec. 23, p. 52), and several other inquiries which he believes also came through this description.

Capitalizing an opportunity, this smart merchandiser has contracted for advertising space, and now the inquiries should start rolling in (O. K., sales department?).

* * *

Booklet De Luxe

OUR attention has been called to a swell 11 x 14-inch booklet on Alleghemy stainless steels recently published by Joseph T. Ryerson & Son Inc., the steel warehouse people. It's crammed with four-color pictures, nifty blonde models gazing at what must be stainless steel (we didn't pay any attention to that), green cellophane fly-leaves, and a heavy red and silver cover. Better get yourself a copy.

* * *

Anthem

HOW long will it be, we wondered the other day, before one of STEEL'S editors weakens and makes some use of the catch line from that song about the music going 'round and 'round? A cursory glance at this week's stone-proofs answered this question: turn to page 56 and there it is: "The Belt Goes Down and Around." Whoa-ho-ho-hoa-ho-ho! And it comes out here.

* * *

Blooms Bloom

WOULD you be interested in knowing that the Beloit Metal & Iron Co. has been incorporated in Beloit, Wis., by P. P. Bloom, C. C. Bloom and L. L. Bloom? About all we can add is:

A company run by P. P. Bloom,
C. C. Bloom and L. L. Bloom,
Stands a pretty good chance of participating in the coming industrial boom.

—SHRDLU

Pittsburgh district, to American Bridge Co., Pittsburgh.

1700 tons, building, Alloy, W. Va., Electro Metallurgical Sales Corp., New York, to Lackawanna Steel Construction Corp., Buffalo.

1600 tons, pier No. 5, South Boston, Mass., to American Bridge Co., Pittsburgh, through Merritt, Chapman & Scott.

1500 tons, midtown Hudson tunnel, Jersey approach, to Phoenix Bridge Co., Phoenixville, Pa., through George A. Brewster Co., Bogota, N. J.

1225 tons, senior high school, Boston, to Bethlehem Fabricators Inc., Bethlehem, Pa.

610 tons, mold yard runway, Inland Steel Co., Indiana Harbor, Ind., to Duffin Iron Co., Chicago.

600 tons, state hospital buildings, Manteno, Ill., to Duffin Iron Co., Chicago, in addition to 1350 tons reported last week.

415 tons, school, Hammond, Ind., to Joseph T. Ryerson & Son Inc., Chicago.

365 tons, Joseph E. Seagrams & Sons, fermenter building, Lawrenceberg, Ind., to Stacey Mfg. Co., Cincinnati.

315 tons, Dravus street bridge, Seattle, to Wallace Bridge & Structural Steel Co., Seattle.

300 tons, four buildings for University of Arizona, Tuscon, to unnamed interest.

290 tons, state highway bridge, Carroll, Iowa, to Bethlehem Steel Co., Bethlehem, Pa.

280 tons, bridge, Mason county, Texas, to Pittsburgh-Des Moines Steel Co., Pittsburgh.

255 tons, assembly hall, Pilgrim state hospital, Brentwood, N. Y., to Weatherly Steel Co., Weatherly, Pa.

235 tons, high school, Wyoming, Pa., to Wilkes-Barre Iron & Wire Co., Wilkes-Barre, Pa.

190 tons, North Carolina state highway project, to Virginia Bridge & Iron Co., Roanoke, Va.

190 tons, postoffice and garage, Rochester, N. Y., to F. L. Heughes & Co., Rochester, N. Y.

160 tons, school, LaSalle, Ill., to Duffin Iron Co., Chicago.

150 tons, additional miscellaneous steel for General Motors Corp. assembly plant, South Gate, Calif., to unnamed interest.

135 tons, tunnel ribs, bid 51,620, metropolitan water district, Los Angeles, to Commercial Shearing & Stamping Co., Youngstown, O.

130 tons, male employes' dormitory, Walton, Mass., to Crosier & Shlager Iron Works, Sommerville, Mass.

125 tons, state building, East Moline, Ill., to Duffin Iron Co., Chicago.

115 tons, school, East Palestine, O., to Ohio Structural Steel Co., Newton Falls, O.

115 tons, state bridge, route 40, Ocean county, New Jersey, sections 10 and 11, through C. D. Proser Pitman, N. J., to Bethlehem Steel Co., Bethlehem, Pa.

110 tons, elevated tank at United States Army barracks, Carlisle, Pa., to Tippett & Wood, Phillipsburg, N. J.

100 tons, girls' trade school, Worcester, Mass., to Eastern Bridge & Structural Co., Worcester, Mass.

Shape Contracts Pending

2000 tons, public school No. 239, Brooklyn, N. Y.

1500 tons, mill buildings, Wisconsin Steel Works, Chicago; bids Feb. 10.

1475 tons, four state bridges, Wisconsin; bids Feb. 4.

1295 tons, H columns, foundations, civic center, San Diego, Calif.; bids opened.

1000 tons, parcel post building, Houston, Tex.; United States Fireproofing Co., Chicago, low for general contract.

710 tons, ventilation building, midtown Hudson tunnel, New York; Cauldwell-Wingate Co., New York, low.

600 tons, bridge, Lorenzo, Idaho.

500 tons, Santa Clara river county bridge, Ventura county, California; bids Feb. 7.

448 tons, seven state bridges, Freemont county, Oregon; bids Feb. 7.

360 tons, state highway bridge, Seward, Kans.

250 tons, swine barn, St. Paul state fair.

100 tons, under-crossing near Phoenix, Ariz.; bids opened.

Unstated, state bridges in Multonomah county, Oregon; bids at Portland, Feb. 6 and 7.

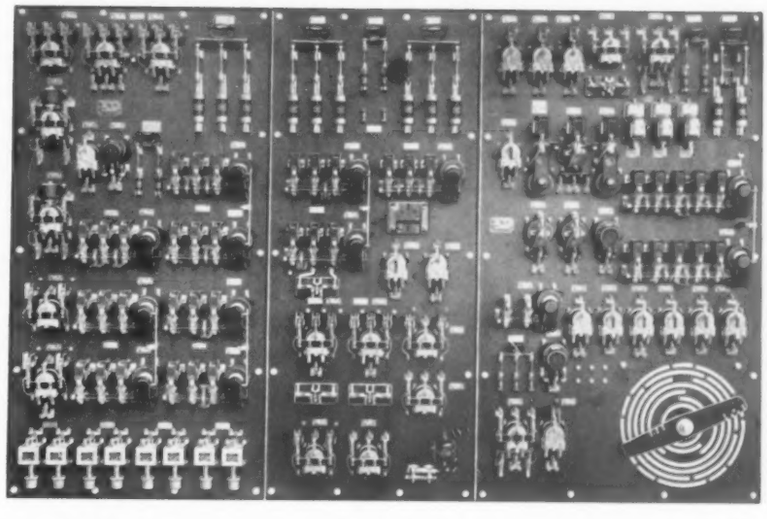
Reinforcing

Reinforcing Bar Prices, Page 73

New York — The large volume of tonnage involved in pending projects presages a continuance of the present good business. Prices continue easy, even 2.10c base delivered having been slightly shaded on some large work. Demand increases for construction of new manufacturing buildings. These requirements are not large in individual cases but rep-

Clark-Sundh

THE A. C.—D. C. SYSTEM



This picture illustrates the flexibility of Clark Contactor design. We have here incorporated Magnetic Contactors for the control of A. C. Motors but the contactors are operated by direct current magnets. This unique feature permits us to obtain exceedingly rapid reversals such as were required in this application.

We will be glad to furnish explanatory details of the advantages of this design which is particularly successful in Sheet and Tin Plate Mills in conjunction with Automatic Roller and Catcher Tables, Screwdowns and Reheating Furnaces with their respective conveyors.

THE CLARK CONTROLLER CO.
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CLEVELAND, OHIO

resent a novelty, as compared with conditions over the past four years.

Pittsburgh—Bids were taken Jan. 31 by the state highway department for a federal works program grade crossing project in Mercer county, that involves a 2250-foot reinforced concrete and plate girder overpass bridge. Bars will be purchased through general contractor. Youngstown Sheet & Tube Co. has been awarded 4498 tons for the Fort Peck dam, Montana, and Electric Welding Co., McKees Rocks, Pa., has closed on 500 tons for the North Park-Babcock boulevard work. The market is generally quoted 2.05c. base, by distributors for carload lots, but some individual jobs are open to wide concessions.

Cleveland—Demand is quiet, with all municipal school work here awarded. State work appears more active, but tonnages are small.

Chicago—Orders are lighter, although a large tonnage still is pending for various public projects. Awards include 640 tons for sanitary district work and 200 tons for a bridge approach. Private building still is relatively quiet, but various projects for which bids are to be asked in the near future will take sizable tonnages. Reinforcing bar prices continue weak.

Philadelphia—Following the placing of more than 2600 tons for local school work last week, the market is quiet. A number of projects, however, are still pending and in an adjacent district 2500 tons have been placed for a federal housing project at Branchville, Md., the business going to Joseph T. Ryerson & Son Inc., Chicago. General price situation continues unsettled.

San Francisco—Bar awards were the largest in over a month, 16,214 tons being placed. Bethlehem Steel Co., Bethlehem, Pa., secured 7850 tons for precast reinforced concrete pipe for the metropolitan water district, Los Angeles. The United Concrete Pipe Co., who received the general contract for precast concrete pipe for the same district, under specification 134, in December, has placed the tonnage with a west coast mill.

Seattle—Active demand continues and several important projects are up for figures, or are pending. For the addition to the Montgomery Ward store, Portland, Oreg., 700 tons will be required. Plans are being made for new approaches to the Ballard bridge here, requiring 500 tons.

Concrete Awards Compared

	Tons
Week ended Feb. 3	**24,196**
Week ended Jan. 27	**12,888**
Week ended Jan. 20	**13,543**
This week, 1935	**1,562**
Weekly average, 1935	**6,862**
Weekly averae, 1936	**12,483**
Weekly average, January	**9556**
Total to date, 1935	**19,489**
Total to date, 1936	**62,419**

Reinforcing Steel Awards

7850 tons, schedules 6-P and 7-P, precast reinforced concrete pipe, metropolitan water district, Los Angeles, specification 137, to Bethlehem Steel Co., Bethlehem, Pa.

5500 tons, specification 134, precast reinforced concrete pipe, metropolitan water district, Los Angeles, to United Concrete Pipe Co., Los Angeles.

4498 tons, Fort Peck dam, Montana, to Youngstown Sheet & Tube Co., Youngstown, O. All prices submitted by mill bidders, identical with award drawn by low.

2500 tons, federal housing project, Branchville, Md., to Joseph T. Ryerson & Son Inc., Chicago.

625 tons, Calumet intercepting sewer, Chicago, to Concrete Steel Co., Chicago; Underground Construction Co., Chicago, general contractor.

525 tons, third unit, Green river pipeline, Tacoma, Wash., to American Concrete & Steel Pipe Co., Los Angeles.

500 tons, North Park and Babcock boulevard development, Pittsburgh, to Electric Welding Co., McKees Rocks, Pa.

500 tons, well covering, city of Cincinnati waterworks, to Joseph T. Ryerson & Son Inc., Chicago.

300 tons, hospital, Tenth and Linden streets, Long Beach, Calif., to unnamed interest.

231 tons, two bulk head piers, San Francisco, to Soule Steel Co., San Francisco.

200 tons, Hickory avenue approach to Ogden avenue bridge, Chicago, to Concrete Engineering Co., Chicago.

150 tons, sewage disposal plant, Danbury, Conn., to Truscon Steel Co., Youngstown, O., through Marianna Construction Co., New Haven, Conn.

150 tons, Connecticut state highway bridge ,to Truscon Steel Co., Youngstown, O., through Bacco Construction Co., Stamford, Conn.

135 tons, state highway work in Washington, to Northwest Steel Rolling Mills, Seattle.

118 tons, New York Central bridge, 232nd street, New York, to Fireproof Products Co., New York, through Doyle & Doyle, White Plains, N. Y.

115 tons, joists, Southwest junior high school, Reading, Pa., through E. A. Reider, that city, general contractor, to Bethlehem Steel Co., Bethlehem, Pa.

100 tons, Agassiz school, San Francisco, to Gunn, Carle & Co., San Francisco.

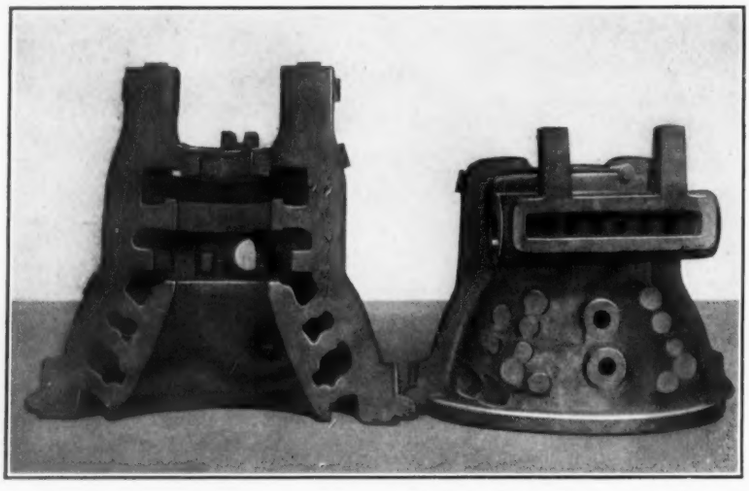
100 tons, bottling plant for Columbia Breweries, Tacoma, Wash., to Northwest Steel Rolling Mills, Seattle.

100 tons, fishways at Rock Island, Wash., power plant, to Bethlehem Steel Co., Seattle.

Reinforcing Steel Pending

1100 tons, assembly plant, General Motors Corp., Southgate, Calif.; bids being taken.

QUALITY CASTINGS



Cylinder Base and Cover for Steam Turbine

Rolled Steel Wheels — Rolled Steel Rings and Flanges
Forgings — Steel Castings — Steel Tires
Springs — Gear Blanks

STANDARD STEEL WORKS COMPANY
BURNHAM, MIFFLIN CO., PENNA.
District Offices
New York **Philadelphia** **Portland, O.** **Chicago** **St. Louis** **San Francisco**

700 tons, seven bridges, route 6, New Jersey state highway department; bids will be asked.

700 tons, addition to Montgomery-Ward building, Portland, Oreg.; bids soon.

650 tons, Federal Reserve bank building, Washington; George A. Fuller Co., Washington, low bidder.

600 tons, route 25, section 24, New Jersey state highway department; new bids will be asked.

300 tons, rail or billet steel, filtration plant, Santa Barbara, Calif.; bids Feb. 10.

137 tons, seven bridges, Fremont county, Wyoming; bids Feb. 4.

125 tons, high school, Chico, Calif.; general contract to Campbell Construction Co., Sacramento, Calif.

105 tons, Clackamas river state bridge, Clackamas county, Oregon; bids Feb. 4.

103 tons, billet or rail steel, Sheffield dam, Santa Barbara, Calif.; bids Feb. 10.

100 tons or more, state viaduct, Latah county, Idaho; H. C. Malott, Seattle, general contractor.

100 tons, school, Hanford, Calif.; bids opened.

Unstated, free port warehouse and cold storage building, Stapleton, Staten Island, N. Y.; bids will be asked soon.

Pig Iron

Pig Iron Prices, Page 74

Pittsburgh—The foundry trade's requirements continue to be made up of small lots, but the advanced market is being maintained, and new sales are proceeding on the basis of $19.50 per ton for No. 2 foundry and malleable, $19 for basic, and $20 for bessemer. Practically no shipments are proceeding via water at present.

Cleveland—Prospects for this month are good, with consumption sustained largely by automotive and sanitary equipment requirements. Sales are light, but shipments are holding up well. Volume of implement work is steady.

Chicago—Large buyers have yet to enter the market with new business. Stocks still are accommodating these interests, but moderate orders continue to be placed by smaller foundries which did little speculative buying last quarter. January shipments were about one-half the December total, and only a moderate improvement is in prospect for February. Foundry operations are steady, with some gains noted among automotive jobbing plants.

Boston—First importation of Belgian pig iron along the eastern seaboard consists of 400 tons. The iron was brought in by African Metals Co., 25 Broadway, New York.

Philadelphia—Sellers look for improved business as this month gets under way, particularly in the latter half. January specifications were spotty and were comprised largely of small fill-in orders. A small lot of Russian iron, 140 tons, arrived here recently, the third lot within the past four or five weeks.

New York—Sellers expect an increase in tonnage this month, as consumers' stocks which were laid in in the closing weeks of last year became absorbed. Improvement will be hastened, it is believed, by a modest gain in foundry melt which in January exceeded expectations.

Buffalo—Shipments of iron during January were approximately 25 per cent below those of December. Sellers think consumers' inventories are small and that the gain in sales will continue. Buying is largely for immediate needs. Seven blast furnaces continue active and all are believed scheduled for long runs.

Cincinnati—Shipments during January were 50 per cent of tonnage in December. Buying and specifications are showing a moderate pick-up, and market activity in February is expected to be considerably improved. Shipments now are for immediate melt, foundry operations holding close to December levels.

St. Louis—Shipments tended upward during the last two weeks of January, but still remained substantially below the rate during No-

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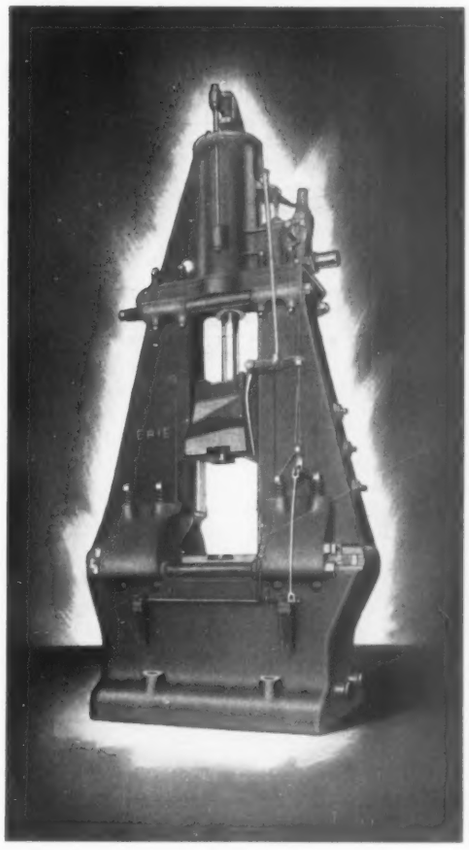

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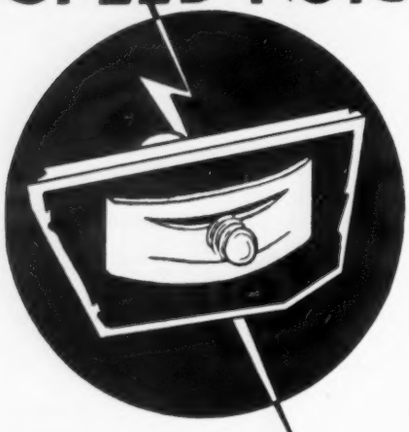
SPEED NUTS



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Lockers	Vehicles (Children's)
Name Plates	Water Heaters
Oil Burning Units	
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Tinnerman Stove & Range Co.
Speed Nut Division
CLEVELAND, OHIO

vember and December. The melt is holding up well, and except for labor troubles at stove plants, total volume would compare favorably with the peak reached in December. New business is reported in fair volume and gaining steadily. Small lots are being taken, and the character of the buying indicates actual need for the iron. In point of consumption, relatively the best showing is made by the farm implement and tractor interests.

Birmingham, Ala.—While there has been a little lagging in delivery during the past two weeks, the market is firm, and numerous spot orders are being received. Prospects continue bright.

Toronto, Ont.—New business is appearing in good volume. Sales the past week exceeded 1000 tons, with a few inquiries received for future delivery. Most melters, however, are adhering to hand-to-mouth buying, and sales are being made at frequent intervals. Production has been curtailed somewhat with the blowing out of the blast furnace at Port Colborne, Ont. Prices are unchanged.

Scrap

Scrap Prices, Page 75

Pittsburgh — Consuming mills, mindful of a scrap market that shows no evidence of weakness, were nontheless delaying entering the market. Based on last sales at $14.50 and $14.75, the No. 1 steel market remains quoted $14.25 to $14.75, but compressed sheet scrap is 25 cents stronger at $14.50 to $15.00 and low phos grades are also up 25 cents, the latter based on several small foundry purchases. Machine shop turnings are now quoted $10.00 to $10.50, which is a slight advance, but railroad steel specialties are quoted unchanged at $16.25 to $16.75. A district mill has purchased a sizable tonnage of No. 1 cast scrap at $13 recently. Lists of the Pennsylvania railroad, Feb. 5, and a Baltimore & Ohio, Feb. 3, the former totaling 30,000 tons and the latter 5000 tons are a market feature.

Cleveland — The continued zero weather is "freezing up" shipments to consumers and yards. Dealers are finding it still difficult to obtain supplies of old materials and scrap movements are more or less routine. The recently offered railroad lists, which included about 23,000 tons by Pennsylvania, are expected to close next week. New sales are slow in maturing throughout northern Ohio. The cutting down of active open hearths by Otis Steel Co. by three units is believed to be only a temporary move following the curtailment by 15 per cent of the local Fisher Body plant. Resumption of both is expected some time in February. Meanwhile, quotations on all grades of scrap at Cleveland and in the valley remain firm but unchanged.

Chicago—Scrap prices continue firm, aided by the restriction in supplies which has developed as a result of severe weather in the central west. Sellers' bids on railroad lists hold around $14 for heavy melting steel, although few offerings have come to this district lately. New business from mills is absent but shipments against old contracts are steady.

New York—A slight flurry features the scrap iron and steel market here because several eastern Pennsylvania mills are urging their dealers to rush shipments against new contracts. The dealers have had considerable difficulty, due to the heavy fall of snow and the cold weather, in collecting scrap recently. Dealers are paying $5.75 to $6.25 for grate bars, New York, which they are shipping to eastern Pennsylvania at $9.75 delivered. They are paying the same range of prices for stove plate for delivery at the same figure.

Philadelphia—A round tonnage of No. 1 steel has been purchased by the leading Claymont, Del., consumer at $12.50, delivered, with a lot purchased by another buyer at $13. Details of this latter transaction are lacking. The Claymont purchase was the first for this point in several weeks. The scrap market generally is firm to strong, with severe weather conditions an important strengthening factor. While no new consuming purchases of heavy breakable cast have been reported at above $12.50, delivered, dealers are being forced to pay as high as that figure in covering on some contracts.

Buffalo—Scrap continues to move away from Buffalo, with old material worth more in cars for distant shipment out of yards here than it is delivered to local mills, according to their bids. Dealers are declining to sell under the circumstances and look for a firm attitude to result in substantially higher prices within 30 days.

Detroit—The market is stronger and prices of a number of grades are up 25 to 50 cents. No. 2 heavy melting steel has advanced 50 cents to $9.25 to $9.75, while compressed sheets are up 25 cents at $10.75 to $11.25. Dealers are bidding higher figures on a number of grades, while offerings by automotive plants reflect recent curtailments in operations.

Cincinnati—Quotations on scrap iron and steel continue unchanged, with activity confined to covering on recent contracts and the normal tonnage movement to foundries. Mills, fairly well protected, show no disposition to further commitments. Deal-

ers consider the market strong. Weather conditions hamper river shipments but this has caused no serious inconvenience to consignees.

St. Louis—Prices have acquired additional strength by delayed movements and other disabilities incident to the prolonged cold spell. There has been a sharp contraction in offerings from all sources, and operations at commercial yards are at a standstill. Advances were general through the entire list, markups ranging from 25c to $1.75c per ton.

Birmingham, Ala.—Demand is picking up. Price holds firmly to new adjustment with several items above a month ago. Available stock has not increased but all specifications are being filled promptly.

Seattle—The market is softer. Japan is still holding off and dealers are turning to mills for an outlet. Prices are about 50 cents lower, local plants paying $9.50 gross for No. 1 melting and $7.50 gross for No. 2. The domestic movement is quite steady, the Seattle plant of Bethlehem Steel Co. taking more than 5000 tons monthly recently.

Toronto, Ont.—Trading in iron and steel scrap is active and dealers report increased shipments of heavy melting steel and other steel grades to the Hamilton district against contract. Toronto consumers are depleting accumulations built up during the past couple of years and now are entering the market for new supplies. Montreal dealers also report more active demand for steel scrap for domestic consumption.

Warehouse

Warehouse Prices, Page 76

Pittsburgh—Finished steel shipments in January were as heavy as those of December. Prices are firm, with bars under 3 inches, and small shapes, 2.95c; structurals and plates, 3.15c, and cold-drawn bars, 3.35c, base for 400 to 999 pounds for city shipment. On country shipments, 10 cents off base price is allowable.

Cleveland—Improvement is shown in orders, with tonnages still ahead of December. Compared with last year, tonnages are up 20 per cent. Slight decline is felt only in those sections affected by weather conditions.

Chicago—Sales continue heavier than a year ago, though demand has been retarded by unfavorable weather. The latter applies principally to building activity. Prices are steady and unchanged.

New York—Demand is somewhat improved but not up to the level prevailing prior to Christmas, cold weather having delayed recovery. Prices on domestic steel continue to hold firm, with the exception of galvanized sheets which recently have been ragged, because of competition with high quality seconds offered at low prices. As a rule, galvanized sheets are bringing 4.30c base delivered for lots of 499 pounds or less, 4.16c for lots of 500 to 1499 pounds and 4.81c for lots of 1500 pounds or more. However, there has been considerable waiving of the quantity differentials and large lots have sold as low as 3.71c. There seems to be a firmer tone in galvanized sheets and consumers are finding it less easy to buy at these prices.

Philadelphia—While January business in the market did not measure up to some earlier trade expectations, most jobbers are looking for an improvement before the end of February. Resellers are inclined to discount much of present inactivity as seasonal. Prices are unchanged.

Detroit—Business is fairly steady, but recently has been affected by the weather which has restricted building activity. Die shops are between seasons and are furnishing but little business to jobbers. Prices are unchanged.

Cincinnati—Tonnage suffered decrease during the past 10 days, due to the effects of bad weather. The immediate outlook is brightened by the appearance of orders and inquiries for material required on federal-financed jobs, WPA or PWA, most tonnage being in reinforcing bars. Prices remain steady.

St. Louis—Weather conditions during the past week or ten days have been a dominant influence in business, holding down orders although a contrary effect was noted on certain seasonal goods, notably tubing and some descriptions of sheets. Buying by railroads continues active.

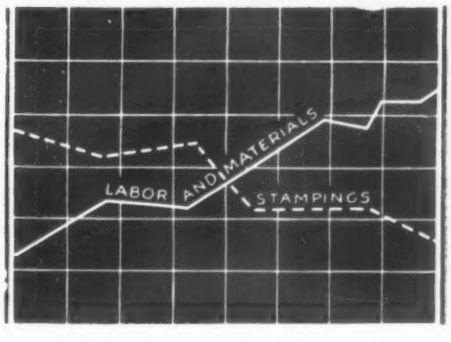
Seattle—Volume is increasing slowly but is more active in Oregon. Turnover is about normal for this season, spring buying expected to begin next month. Portland jobbers have cut bars, plates and shapes 20 cents per 100 pounds to 3.50c, 3.35c and 3.50c respectively, effective Jan. 20.

Bolts, Nuts, Rivets

Bolt, Nut, Rivet Prices, Page 73

Pennsylvania railroad's shops and other car builders have begun to release against bolt, nut, and rivet requirements to build the 10,000 freight cars which the Pennsylvania contracted for several months ago. The re-

A STUDY IN "BLACK AND WHITE"



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quirements of bolts, nuts and rivets varies from 500 to 900 pounds per car. Thus, there are about 3500 tons of these products involved.

Prices are fairly firm at 70-10-5 off for small carriage and machine bolts, with 70-10 off quoted on larger sizes. Large rivets are named at 2.90c, Pittsburgh or Cleveland, and small rivets at 70-5 off list.

Bolt and nut makers now are interested in the outcome of the Bessemer & Lake Erie and Union railroad cars, as these 3000 gondolas will require about 1000 tons of bolts, nuts, and rivets. From other directions the market is more active than in December.

At Cleveland, the decline in automotive demand is slight. The general tone of the market is strong.

At Chicago, bolt, nut and rivet specifications show little change, but are being received in fairly substantial volume from some consumers. Railroad shops are taking larger lots than was true a year ago, while requirements of farm implement manufacturers also are ahead of the 1935 rate.

Coke By-Products

Coke By-Product Prices, Page 73

New York—Recent embargo by Germany against exports of crude naphthalene has resulted in a further tightening of the supply available in this country. Both crude and refined grades are scarce; in fact, the supply is not sufficient to satisfy demand. Naphthalene in flakes and balls continues 6¾c per pound, in barrel lots, at Philadelphia and Newark, N. J., plants, with free delivery in the New York, New Jersey and Philadelphia districts. However, there seems every likelihood that another price advance will materialize at an early date.

Supplies of toluol, industrial xylol and solvent naphtha also are tight. There are no stocks for spot shipment. Prices are firm on these distillates but the situation is not comparable to that prevailing in naphthalene, so that no advances are expected.

Because of the availability of synthetic phenol, there is no shortage in the supply of this product. Prices are firm, U. S. P. phenol with 39.5 Cent. melting point being quoted at 14½ cents per pound, at Frankford, Philadelphia, plant, when packed in 450-pound returnable drums.

Iron Ore

Iron Ore Prices, Page 75

New York—Turkish chrome ore has been advanced approximately 25 cents a ton, or slightly under that amount on most grades. The principal grade of India chrome ore is as yet unchanged, although one grade to be advanced is to the 45 to 46 per cent, now quotable at $16.50. Other imported ore is unchanged.

Nonferrous Metals

Nonferrous Metal Prices, Page 60, 61

New York—While the general business outlook is confused by political, financial and legislative factors, nonferrous metal markets pursued a tranquil course last week. The trend for metals promises to be on the side of increased demand and higher prices during the next few months.

Copper—Moderate daily sales were reported, bringing the total for January to over 30,000 tons. The industry is still in favorable statistical position and prices held firm at 9.25c, Connecticut, for electrolytic.

Lead—Sales increased about 60 per cent over the preceding period and were well spread among all classes of consumers. The market,

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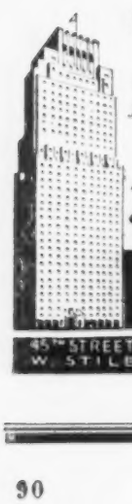

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both statistically and pricewise, is accumulating considerable price strength and many observers anticipate higher levels. The price held firm last week at 4.35c, East St. Louis.

Zinc—Prime western zinc went through a period of unsettlement and about 600 tons were sold at 4.80c, East St. Louis. By the close Wednesday, however, all metal at the shaded level had been withdrawn or absorbed. Daily closing levels were unchanged at 4.85c, East St. Louis.

Tin—Moderate tonnages of tin were sold with spot prices strong due to limited supplies of nearby metal. The International Tin committee at its meeting in Brussels on Feb. 19 is expected to reduce export quotas for the second quarter from the current 90 per cent rate. The market closed above the 48-cent level for Straits spot.

Antimony—American and Chinese antimony prices advanced ⅛-cent to 12.75c, New York. Light small-lot and some carlot buying was reported.

Steel in Europe

Foreign Steel Prices, Page 76

London—(*By Cable*)—Pig iron makers in Great Britain are quoting mainly on iron in yard stocks as they are sold heavily through first half. All steelworks are well employed and some are out of the market. Deliveries of Continental semifinished steel are better and are improving the situation. Prices of structural steel for export have been increased 5s to many markets. Exports of tin plate and galvanized sheets are dull.

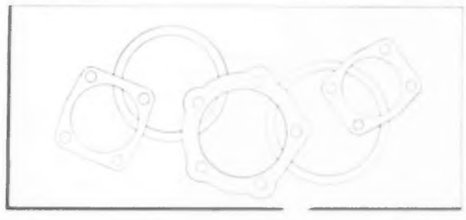
The Continent reports new export business is quiet. Great Britain is buying semifinished steel and Germany reports good activity for deliveries to Africa and South America.

Equipment

Chicago—January was an active month in machine tool sales, business showing improvement over both December and a year ago. Inquiries continue fairly active and relatively good demand is in prospect for the next several months. Railroads are counted on for only a moderate pick-up in machinery purchases, though inquiries reflect current and prospective improvement in work at railroad shops. Automotive tool buying is more active. Foundry equipment demand is holding well. Harnischfeger Corp., Milwaukee, has received an order for two 50-ton and two 25-ton steel mill cranes for new hot and cold strip mills being built by Granite City Steel Co., Granite City, Ill.

Cleveland—Expenditure of nearly $1,200,000 for immediate capital improvements in more than a dozen plants has been approved by Republic Steel Corp. here. The largest expenditure will involve over $500,000 in Warren, O., and will include remodeling and enlarging of the cold-rolled strip department, and installation of additional finishing equipment to increase tin plate production. Over $250,000 will be spent in improving the No. 3 electric weld tube mill at Youngstown, O., for making larger sizes of oil well casings. Total expenditure in Youngstown will exceed $400,000. Balance of the $1,200,000 appropriation will be divided among other plants.

Portland, Oreg.—United States engineer here has opened bids for equipment for the Bonneville dam machine shop, including heavy-duty engine lathes, radial drills, shapers, grinders, power hacksaws, and other machinery. Morgan Engineering Co. Alliance, O., is beginning work on two 350-ton gantry cranes which will be shipped soon for use in the Bonneville dam project.



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KRON
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Construction and Enterprise

Ohio

BEVERLY, O.—United Dairy Co. has started on the construction of its new plant here, located on the Muskingum river. Charles Chalfant, local contractor, will be in charge of the work. The new warehouse will be built first, to be followed by the construction of a creamery.

BRYAN, O.—Bryan Implement Co. is remodeling its quarters on East Butler street, to handle incoming stock, and is also carrying a larger number of parts than formerly.

CINCINNATI—Champion Paper & Fiber Co., this city, plans to build a $3,000,000 to $3,500,000 pulp mill, for the manufacture of long fiber paper pulp. Details of the location of the new plant were not disclosed, but the company operates plants at Hamilton, O., and Canton, O

CLEVELAND — Republic Steel Corp., Republic building, will expend $1,200,000 for immediate capital improvements in more than a dozen of its plants. The largest outlay will be of more than $500,000 at Warren, O., which will include the remodeling and enlarging of the cold rolling department for strip steel, and the installation of additional finishing equipment to increase tin plate production. The corporation will also spend $250,000, to improve its electric weld tube mill No. 3 in Youngstown, O., for the purpose of making larger size oil well casings. Total expenditures in Youngstown will exceed $400,000. The balance of the appropriations will be divided among plants in its other manufacturing districts.

CLEVELAND—Thompson Products Inc., 2196 Clarkwood road southeast, has purchased from the Cleveland Railway Co., a 5-story brick and concrete building on Ashland road southeast, containing about 60,000 square feet of floor space. The building will be used to house the company's service division.

CLEVELAND — Simplex Products Corp., 1966 East Sixty-sixth street, maker of piston rings and other products, has moved into its new plant at 3830 Kelley avenue. The plant was purchased recently to provide increased facilities for manufacturing.

CLEVELAND — Industrial Rayon Corp., West Ninety-eighth street and Walford avenue, will build a new plant here adjoining this location. Under present tentative plans, the company proposes to erect a plant with facilities to produce 8,000,000 pounds per year of bleached combed yarn. Hiram Rivitz is president. When this plant is completed, plans are being made for further expansion of a more substantial capacity, in some location not yet selected.

CLEVELAND—Feick Mfg. Co. has been incorporated by Harry Feick, Glenn E. Offenbacher, and Katheryn T. Wright, to manufacture motors and electrical equipment. Squire, Sanders & Dempsey, Union Trust building, is correspondent.

DAYTON, O.—Air corps, materiel division, Wright field, asks bids Feb. 21, for steel tape armored cable, and April 15, for 25 to 200 single place pursuit planes.

DAYTON, O.—Frampton Electrical Equipment Co. has been incorporated by B. R. Shaman, Louis T. Shulman, and C. H. Frampton. Shaman, Winer & Shulman, Union Trust building, is correspondent.

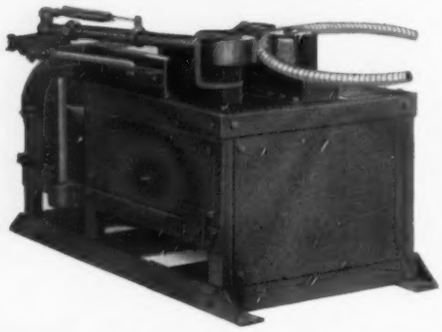
DAYTON, O.—Air corps, contracting officer, materiel division, Wright field, is taking bids Feb. 5 for black pipe couplings, galvanizezd pipe couplings, cast iron pipe elbows, galvanized pipe elbows, galvanized and cast iron tees, black and galvanized steel pipe, gate and globe valves, radiator plugs, wrought iron pipe, and regulators; and Feb. 11, for 120 transformers, under circular No. 515.

DAYTON, O. — Dayton Malleable Iron Co., 1396 West Third street, suffered $5000 loss recently to its coal pulverizing building, as a result of an explosion and fire. Anthony Haswell is president of the firm.

DAYTON, O.—Air corps, contracting officer, materiel division, Wright field, will ask bids Feb. 24 for boring machines.

GIRARD, O.—Golden Glow Dairy Co., Churchill road, has started work on an expansion program that will more than double the capacity of the plant. Phil Altman, owner, has announced that an addition will be built to the present plant, giving more room for the handling of milk, cream, etc., and also giving the firm facilities for greater production of ice cream.

MANTUA, O. — Mantua Grain & Supply Co., this city, suffered loss to



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THE SHOOP BRONZE CO.
344-360 W. Sixth Ave. Bell Phone 371
TARENTUM, PA. (PITTSBURGH DISTRICT)

its feed mill recently, causing damage to a considerable amount of its machinery.

NEWARK, O.—A .P. Hess Co. is planning to install a 1000-gallon capacity gasoline tank, in the rear of the building at 102-108 East Main street. Ordinance granting permission has been passed by the city council.

NORTH CANTON, O.—Hoover Co. is constructing an addition to its suction sweeper factory here. Recent introduction of a new model made necessary the additional manufacturing space, according to officials of the company.

PEMBERVILLE, O.—Pemberville Elevator Co., located at the end of this city's main street, suffered loss by fire to its building recently, amounting to $75,000, involving damage to a tower, powerhouse, and new diesel generating engine. William Kohring is general manager. All milling equipment in the tower was destroyed.

PIQUA, O.—City, W. J. Baldwin purchasing agent, is taking bids Feb. 5 for the following equipment; one 50-ton car of 6-inch cast iron pipe, class C with bell and spigot, in 12-foot lengths; 20 pieces of the same, with bell on the spigot end, in 2 to 3-foot lengths; three reducers, from 6 to 8 inches; six 6-inch sleeves.

SALEM, O.—City, Frank K. Wilson service director, is taking bids Feb. 7 for the furnishing of labor and materials for 3000 feet of centrifugal or sand spun cast iron pipe, 6-inches inside diameter, hub and spigot, 18-foot lengths, 150 lbs. working pressure.

SANDUSKY, O.—City, Albert J. Lauber manager, contemplates the purchase of two 1½-ton trucks, and a new road grader, to replace obsolete equipment.

SEBRING, O.—H. Bettis Co., Zanesville, O., is contemplating the establishment of a branch plant here, for the manufacture of corrugated boxes and various types of containers. The company maintains at present a warehouse on Twelfth street, and this is being remodeled into a factory building and machinery is being installed. J. L. Mahle is president of the company.

TOLEDO, O.—Interlake Iron Corp. has announced that work has begun on the construction of its new plant for the production of iron paving plates. E. J. Clair, general manager, stated that the present expenditures were the beginning of a possible larger expansion program.

TOLEDO, O.—Toledo Foundry & Machine Co. is making extensive repairs on its machinery, in preparation for new business. Joseph Mock is general manager of the firm, which, in addition to its repair shops, produces a variety of castings, and specializes in marine work.

TOLEDO, O.—A fire in the casting room of the Doehler Die Casting Co., 2100 Smead avenue, recently caused damage amounting to $1000.

VAN WERT, O.—Woodland cemetery board of trustees, W. Harrison Walters superintendent, will receive bids Feb. 5 for furnishing 1284 feet of 3-inch cast iron pipe, bell and spigot, and 300 feet of 3-inch cast iron water pipe, double bell. Bids to office of clerk of the board, City building.

Illinois

AURORA, ILL.—Aurora Coal Mines Inc., West Lake street and Grey avenue, has been incorporated to do a general coal mining business, by Maurice S. and Mabel M. Raymond, and Frank B. Wilcox. Correspondent is Little & Latham, 16 Fox building, this city.

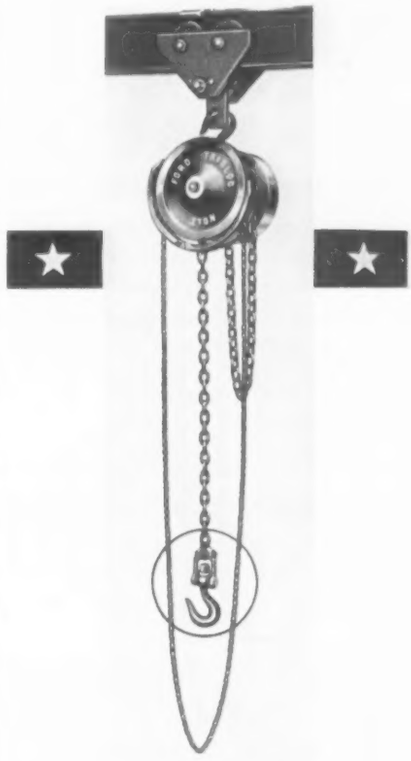
CHICAGO—Kupfer Bros. Paper Co., 145 West Austin avenue, has been incorporated to deal in paper products, by Alfred G. Johnson, Otto C. Bruhlman, and Elmer Engquist. Correspondent is Mayer, Meyer, Austrian & Platt, Continental Illinois building.

CHICAGO—Manbee Equipment Co., 912 Otis building, has been incorporated to deal in automobile parts and accessories, by Sidney W. and Evelyn E. Martin, and William S. Kleinman, 912 Otis building, correspondent.

CHICAGO—American Blow Pipe Co. Inc., 6 North Clark street, has been incorporated to do a general sheet metal business, by W. and Adolph L. Katz, and Philip A. Gueder. Correspondent is Herman N. Cogan, same address.

CHICAGO—John W. Thomson Co., 719 West Sixty-third street, has been incorporated to do a general furnace business, by John W. and Anna E. Thomson, and Margaret Jandacek. Correspondent is Ehler & Austin, 139 North Clark street.

CHICAGO—South Side Brewing Co., 3700 South Halstead street, is taking



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PITTSBURGH TOOL STEEL WIRE CO.
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bids soon for the construction of a new plant addition, to cost $60,000. J. Bednarick, 1643 West Garfield boulevard, is architect.

CHICAGO—Edgewater Construction Co., 228 North LaSalle street, has been incorporated by L. Kiefer, S. Larson and J. Carlson, to do a general construction business. Correspondent is Walter W. Duft, 228 North LaSalle street.

CHICAGO—Federal Pipe & Service Co., 900 South Campbell avenue, is making plans through Graham, Anderson, Probst & White, 80 East Jackson avenue, for a storage addition to cost $80,000.

EVANSTON, ILL.—The welding shop of Lewis E. Lau on 1048 Chicago avenue, was recently destroyed.

JOLIET, ILL.—Illinois Steel Washer Co., formerly located in Lansing, Mich., has established a plant here on Gardner street. Installation of machinery and equipment will be started at once, acording to Burr H. Thompson, plant superintendent. The firm will manufacture steel washers and stampings.

Pennsylvania

DERRY, PA.—American Armament Corp., this city has been granted a state charter to deal in chemicals and armaments of all kinds, by A. J. Miranda, president.

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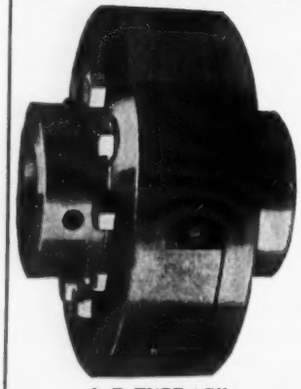

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ERIE, PA.—Hammermill Paper Co. has awarded contract for a $500,000 boiler house and generator plant to Stone & Webster Engineering Corp., New York.

ERIE, PA.—City, Clarence Pulling engineer, is contemplating the installation of storm sewers to cost $1,000,000. WPA will furnish the labor, and the city will supply $75,000 for materials. Plans are completed and work will probably start soon, on Liberty street.

PITTSBURGH—Plans for the purchase of new railroad equipment to cost about $14,000,000 have been announced by the Bessemer & Lake Erie railroad, and the Union railroad, subsidiaries of the United States Steel Corp., this city. Plans inaugurate the first improvement program of the new year in southwestern Pennsylvania, and follow closely the announcement of the Pennsylvania railroad's new equipment program, to cost $25,000,000. The railroads consider the use of alloy steel in the construction of 3000 steel railroad cars of the hopper and gondola types.

PITTSBURGH — Campbell Transportation Co. recently prepared to enter the first of a fleet of six steel gasoline barges, two of which are under construction at the Treadwell Construction Co., Midland, Pa., in the Ohio river trade. A carrier, completed by the Bethlehem Steel Co., at its Leetsdale, Pa., plant, has been delivered to this city where a pump and piping are being installed. Three others being built by the same company will be equipped at the Pittsburgh harbor.

New York

NEW YORK—Horrow & Morse Inc. has been organized for the manufacture of machinery, by Barnett Horowitz, 116 West Forty-fifth street, Cesare Morsani, 1961 Seventy-seventh street, Jackson Heights, and Isaac J. Scolney, 110 East Forty-second street. Papers were filed by Abraham Lipton, 110 East Forty-second street.

NEW YORK—Ronk Holding Corp., 89 Broad street, plans alterations to cost $25,000 to a 7-story penthouse, office, and manufacturing building on 141 East Twenty-fifth street. Maxwell Whitelaw is architect.

New Jersey

DOVER, N. J.—Picatinny arsenal will ask bids here Feb. 10 for steel coils.

Michigan

CHELSEA, MICH.—Sterling Fibre Co., Waltham, Mass., has established a new factory here and will install a large amount of machinery and equipment. H. B. Murphy is in charge of operations.

PONTIAC, MICH.—Pontiac Motor Co. began operations recently in its iron foundry, for the first time since 1932. Full capacity will not be reached until next spring, and bearing caps and other small parts will be cast at first. A $500,000 reconstruction and retooling program is under way, involving a complete renovation of the plant and re-equipment with all modern foundry practices. H. J. Klingler is president and general manager.

Indiana

GARY, IND.—Carnegie-Illinois Steel

Corp. recently announced that it would install advanced heat treating facilities in its rail mill, at a cost of $500,000. It is also reconstructing 138 coke ovens, representing batteries one and two. The cost of this project is expected to exceed $3,000,000.

Maryland

BALTIMORE—Exeter Glass Works, 224 South Exeter street, is receiving bids for a 1-story warehouse. Carl Ganter & Associates, Knickerbocker building, is architect.

SALISBURY, MD.—Salisbury Brick Co. Inc. is installing a drying system at its plant, and will double its present capacity.

District of Columbia

WASHINGTON—Proposals are being received by the procurement division, public works branch, until Feb. 19 for metal stacks, filing equipment, etc., in the United States archives building, this city.

WASHINGTON — Department of agriculture, division of purchase, sales and traffic, will ask bids Feb. 7 for trucks; and Feb. 4, for tractor and trailbuilder unit, road ripper and rooter, and graders.

WASHINGTON—Navy department, bureau of supplies and accounts, will ask bids Feb. 11, for miscellaneous band saws, woodworking machines, presses and drills, schedule No. 7102, with delivery to Mare Island, Calif.; miscellaneous chain hoist, schedule No. 7117; one automatic screw, motor driven machine, schedule No. 7083, with delivery to Newport, R. I.; one welding machine and one vertical, motor driven shaper, schedule Nos. 7098 and 7099, with delivery to Mare island, Calif.

WASHINGTON—Navy department, bureau of supplies and accounts, will receive bids Feb. 7 for miscellaneous enclosed knife type switches, schedule No. 7087, with delivery to Brooklyn, N. Y., and Philadelphia; three motor driven drilling machines, schedule No. 7095, with delivery to Portsmouth, N. H.; 3960 lbs. of nickel-copper alloy plungers, schedule No. 7097, with delivery to this city.

Florida

JACKSONVILLE, FLA.—City commission, T. C. Imeson chairman, receives bids Feb. 5 for constructing and equipping a screen chamber, intake and discharge conduits, for Talleyrand avenue power station. O. Z. Tyler is superintendent of the plants.

TAMPA, FLA.—City has appropriation of $19,321 for constructing a ramp for beaching of seaplanes at the Peter O. Knight airport. Plans are being completed for the construction of a hangar, at a cost of $40,000. Plans also are being prepared for the erection of a $100,000 administration building, by Leo Elliott, 415 Tampa street, architect.

Georgia

AMERICUS, GA.—L. W. Brown, this city, wants a 22 to 24-inch engine, one water tube boiler, and two return tubular boilers.

ATLANTA, GA. — Dixie Freight Lines Inc., 122 Houston street northeast, will erect a 1-story transport building, 100 x 113 feet, on Fair and Fraser streets, involving structural steel, steel sash, and metal doors. Massell Realty Co., E. C. Seiz architect, 119 Luckie street, northwest, is making plans.

Mississippi

HAZELHURST, MISS. — Jenkins Lumber Co. is building a saw mill and planing mill.

NATCHEZ, MISS.—Dr. Wayne Alliston, state administrator for WPA, will start work soon on Adams county cold storage plant, to cost $25,000. Plant is one of 25 to be built in this state.

PASCAGOULA, MISS.—J. E. Travis Jr., WPA supervising airport engineer plans the construction of an airplane hangar designed by Lester C. Winterton, city engineer, and will install modern lighting system.

North Carolina

HAMLET, N. C.—The plant of the Seaboard Garment Mfg. Co. was damaged by fire recently. F. J. Smith is general manager.

MOCKSVILLE, N. C.—The mill

(*Please turn to Page 97*)

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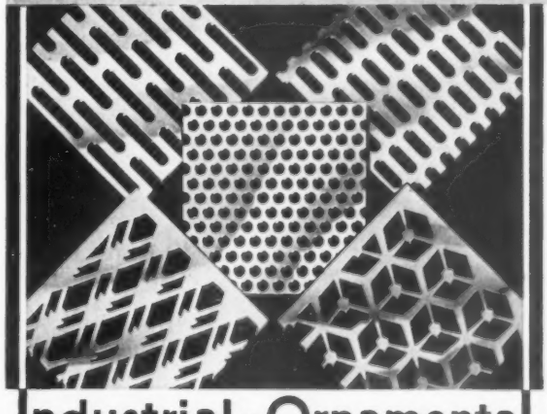

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Jones & Laughlin Steel Corp., Jones & Laughlin Bldg., Pittsburgh, Pa.
Republic Steel Corp., Cleveland, O.
Standard Steel Works Co., Burnham, Pa.
Tennessee Coal, Iron & Railroad Co., Brown Marx Bldg., Birmingham, Ala.

BABBITT METAL
Cadman, A. W., Mfg. Co., 2815 Smallman St., Pittsburgh, Pa.
National Bearing Metals Corp., 928 Shore Ave., Pittsburgh, Pa.
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BANDS—See HOOPS AND BANDS

BANDS (Iron and Steel)
Bethlehem Steel Co., Bethlehem, Pa.
Carnegie-Illinois Steel Corp., Pittsburgh-Chicago.
Inland Steel Co., 38 So. Dearborn St., Chicago, Ill.
Republic Steel Corp., Cleveland, O.
Ryerson, Jos. T., & Son, Inc., 16th and Rockwell Sts., Chicago, Ill.
The Stanley Works, New Britain, Conn. Bridgeport, Conn.

BAR BENDERS
Kardong Bros., 346 Buchanan St., Minneapolis, Minn.

BARGES (Steel)
American Bridge Co., Frick Bldg., Pittsburgh, Pa.
Jones & Laughlin Steel Corp., Jones & Laughlin Bldg., Pittsburgh, Pa.
McClintic-Marshall Corp., Bethlehem, Pa.

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The Udylite Co., 1615 E. Grand Blvd., Detroit, Mich.

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Bethlehem Steel Co., Bethlehem, Pa.
Carnegie-Illinois Steel Corp., Pittsburgh-Chicago.
Firth-Sterling Steel Co., McKeesport, Pa.
Midvale Co., The, Nicetown, Philadelphia, Pa.
Republic Steel Corp., Cleveland, O.
Ryerson, Jos. T., & Son, Inc., 16th and Rockwell Sts., Chicago, Ill.
Timken Steel & Tube Co., Canton, O.

BARS (Concrete Reinforcing)
Carnegie-Illinois Steel Corp., Pittsburgh-Chicago.
Inland Steel Co., 38 S. Dearborn St., Chicago, Ill.
Jones & Laughlin Steel Corp., Jones & Laughlin Bldg., Pittsburgh, Pa.
Republic Steel Corp., Cleveland, O.
Ryerson, Jos. T., & Son, Inc., 16th and Rockwell Sts., Chicago, Ill.
Tennessee Coal, Iron & Railroad Co., Brown Marx Bldg., Birmingham, Ala.
Youngstown Sheet & Tube Co., Youngstown, O.

BARS (Iron)—See IRON (Bar)

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BARS (Steel)
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*Bethlehem Steel Co., Bethlehem, Pa.
Carnegie-Illinois Steel Corp., Pittsburgh-Chicago.
Inland Steel Co., 38 So. Dearborn St., Chicago, Ill.
*Jessop Steel Co., Washington, Pa.
Jones & Laughlin Steel Corp., Jones & Laughlin Bldg., Pittsburgh, Pa.
Laclede Steel Co., Arcade Bldg., St. Louis, Mo.
*Ludlum Steel Co., Watervliet, N. Y.
*Midvale Co., The, Nicetown, Philadelphia, Pa.
*Republic Steel Corp., Cleveland, O.
Ryerson, Jos. T., & Son, Inc., 16th and Rockwell Sts., Chicago, Ill.
The Stanley Works, New Britain, Conn. Bridgeport, Conn.
Tennessee Coal, Iron & Railroad Co., Brown Marx Bldg., Birmingham, Ala.
Timken Roller Bearing Co., The, Canton, O.
Weirton Steel Co., Weirton, W. Va.
Youngstown Sheet & Tube Co., Youngstown, O.

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Bethlehem Steel Co., Bethlehem, Pa.
Carnegie-Illinois Steel Corp., Pittsburgh-Chicago.
Inland Steel Co., 38 So. Dearborn St., Chicago, Ill.
*Jessop Steel Co., Washington, Pa.
*Ludlum Steel Co., Watervliet, N. Y.
Ryerson, Jos. T., & Son, Inc., 16th and Rockwell Sts., Chicago, Ill.
Weirton Steel Co., Weirton, W. Va.
Youngstown Sheet & Tube Co., Youngstown, O.

BEARINGS (Ball)
Bantam Ball Bearing Co., The, South Bend, Ind.
Boston Gear Works, Inc., North Quincy, Mass.
Fafnir Bearing Co., New Britain, Conn.
Norma Hoffmann Bearings Corp., Stamford, Conn.
New Departure Mfg. Co., Bristol, Conn.

BEARINGS (Bronze)
Shoop Bronze Co., The, 344-360 W. Sixth St., Tarentum, Pa.
Cadman, A. W., Mfg. Co., 2816 Smallman St., Pittsburgh, Pa.
Cramp Brass & Iron Foundries Co., Paschall Sta., Philadelphia, Pa.
Lawrenceville Bronze Co., Bessemer Bldg., Pittsburgh, Pa.
National Bearing Metals Corp., 928 Shore Ave., Pittsburgh, Pa.
Rhoades, R. W., Metaline Co., 50—3rd St., Long Island City, N. Y.
Shenango-Penn Mold Co., Dover, O.

BEARINGS (Journal)
Bantam Ball Bearing Co., The, South Bend, Ind.
Fafnir Bearing Co., New Britain, Conn.
Hyatt Roller Bearing Co., P. O. Box 476, Newark, N. J.
Link-Belt Co., 300 W. Pershing Rd., Chicago, Ill.
National Bearing Metals Corp., 928 Shore Ave., Pittsburgh, Pa.
Timken Roller Bearing Co., The, Canton, O.

BEARINGS (Oilless)
Rhoades, R. W., Metaline Co., 50—3rd St., Long Island City, N. Y.

BEARINGS (Radial)
Bantam Ball Bearing Co., South Bend, Ind.
Fafnir Bearing Co., New Britain, Conn.
Hyatt Roller Bearing Co., P. O. Box 476, Newark, N. J.
New Departure Mfg. Co., Bristol, Conn.
Timken Roller Bearing Co., Canton, O.

Bearings (Roll Neck)
Bantam Ball Bearing Co., The, South Bend, Ind.
Fafnir Bearing Co., New Britain, Conn.
Hyatt Roller Bearing Co., P. O. Box 476, Newark, N. J.
National Bearing Metals Corp., 928 Shore Ave., Pittsburgh, Pa.
Ryerson, Jos. T., & Son, Inc., 16th and Rockwell Sts., Chicago, Ill.
Timken Roller Bearing Co., Canton, O.

BEARINGS (Roller)
Bantam Ball Bearing Co., The, South Bend, Ind.
Fafnir Bearing Co., New Britain, Conn.
Hyatt Roller Bearing Co., P. O. Box 476, Newark, N. J.
Norma Hoffmann Bearings Corp., Stamford, Conn.
S K F Industries, Inc., Front St. & Erie Ave., Philadelphia, Pa.
Timken Roller Bearing Co., The, Canton, O.

BEARINGS (Roller Tapered)
Bantam Ball Bearing Co., South Bend, Ind.
Timken Roller Bearing Co., Canton, O.

BEARINGS (Rolling Mill)
Bantam Ball Bearing Co., South Bend, Ind.
Cramp Brass & Iron Foundries Co., Paschall Sta., Philadelphia, Pa.
Hyatt Roller Bearing Co., P. O. Box 476, Newark, N. J.
Lawrenceville Bronze Co., Bessemer Bldg., Pittsburgh, Pa.
Norma Hoffmann Bearings Corp., Stamford, Conn.
Shoop Bronze Co., The, 344-360 W. Sixth St., Tarentum, Pa.
Timken Roller Bearing Co., Canton, O.

BEARINGS (Quill)
Bantam Ball Bearing Co., South Bend, Ind.

BEARINGS (Thrust)
Bantam Ball Bearing Co., The, South Bend, Ind.
Fafnir Bearing Co., New Britain, Conn.
Norma Hoffmann Bearings Corp., Stamford, Conn.
Timken Roller Bearing Co., The, Canton, O.

BENDING AND STRAIGHTENING MACHINES
Alliance Machine Co., The, Alliance, O.
Kardong Bros., 346 Buchanan St., Minneapolis, Minn.
Morgan Engineering Co., The, Alliance, O.
Thomas Spacing Machine Co., Pittsburgh, Pa.

BENZOL AND TOLUOL RECOVERY PLANTS
Koppers Construction Co., 1438 Koppers Bldg., Pittsburgh.
Youngstown Sheet & Tube Co., Youngstown, O.

BILLETS (Alloy and Carbon Steel)
Alan Wood Steel Co., Conshohocken, Pa.
Andrews Steel Co., Newport, Ky.
Carnegie-Illinois Steel Corp., Pittsburgh-Chicago.
Firth-Sterling Steel Co., McKeesport, Pa.
Republic Steel Corp., Cleveland, O.
The Stanley Works, New Britain, Conn. Bridgeport, Conn.
Timken Steel & Tube Co., Canton, O.
Washburn Wire Co., Phillipsdale, R. I.

(Concluded from Page 95)

plant and machinery of O. L. Williams' veneer mill was damaged by fire recently. These facilities were operated by Beck & Sechrest, Thomasville, Ga., as a block mill.

South Carolina

COLUMBIA, S. C.—Kline Iron & Metal Co., 1225 Huger street, has acquired the stock and equipment of the Shand Iron Works.

WALHALLA, S. C.—Morris-Taylor Lumber Co. Inc., 1220 Harwood road, Ashville, N. C., has acquired 42,000 acres of timber land in the state and is now placing portable mills on the tract, and will construct and operate dry kilns, planing mills, etc. It has purchased 8 acres on which the concentration yard will be placed, buildings erected, and machinery installed. W. Granville Taylor and Gilbert H. Morris are officials.

Louisiana

NEW ORLEANS, LA. — United States engineer, Prytania street, will ask bids Feb. 10 for cast steel anchors.

West Virginia

CHARLESTON, W. VA.—Sturwold Safety School & Passenger Bus Body Co., Virginia street west, has been incorporated by Howard M. Sturwold.

LOGAN, W. VA.—Guyan Machinery Co. Inc., this city, wants the following items: one band saw for metal; one power driven squaring shear; motor generator sets; rotary converters; one horsepower motor; one horsepower gas engine; three transformers; one 200 to 250 kilowatt alternator; and ½-horsepower speed reducers.

WHEELING, W. VA.—West Virginia Appliance Co. has been incorporated by W. N. Hogan, and J. B. Noyes, 12 Campbell apartments.

WHEELING, W. VA. — Wheeling Yacht & Boat Co. has been incorporated by Henry S. Schraeder and H. Wallace.

Tennessee

KNOXVILLE, TENN. — Tennessee Valley Authority asks bids Feb. 5 for diesel driven portable air compressors, having a capacity of 300 feet of free air per minute, at 100 lbs pressure per square inch; Feb. 4, for vertical centrifugal unwatering pumps, electrically driven and 14 to 16-inches in size; Feb. 4, for crawler type tractors. This equipment is for the Chicamauga dam. Bids are also to be asked Feb. 7, for an automatic elevator for the Norris dam, including all appurtenances of a complete unit.

MEMPHIS, TENN.—Choctaw Culvert & Machinery Co., T. B. Daniels secretary, plans rebuilding plant, replacing burned Hollywood pipe factory, at Dexter and Tupelo streets. Will let contract very soon.

Virginia

NORFOLK, VA.—Diamond Barrel Corp. has been organized by Frank W. Berkley, president, Law building.

RICHMOND, VA. — Electrical Equipment Co. Inc., Box 1714, wants electric motors, 75 to 100-horsepower, 2200 volts, 720 r.p.m., with or without starting equipment.

WARRENTON, VA.—A portion of the building belonging to the Remington Milling Co. was recently damaged by fire.

Missouri

GREENFIELD, MO.—Dade County Mining Co. Inc., E. W. Nagel manager, is developing a concentration zinc mill, and wants milling machinery.

ST. LOUIS—Missouri Pacific railroad and subsidiaries have been authorized by the court to spend $6,422,894 for road and equipment programs of improvement during 1936. Funds will be spent on tracks, roadbed, shop equipment, locomotives, freight and passenger cars, and will include the purchase of 17,000 tons of new steel rail.

ST. LOUIS—The storage warehouse of the American Refrigeration Transit Co., 1 Barton street, was recently damaged by fire.

Arkansas

CROSSETT, ARK.—Crossett Lumber Co., subsidiary of Crossett Watzek Gates, Railway Exchange building, Chicago, will complete engineering plans in 30 to 60 days for construction of a kraft paper mill.

Texas

BAYTOWN, TEX.—Humble Oil & Refining Co., this city, located on the Houston ship canal, will erect a new $2,000,000 polymerization plant. This project will tie in with a pipeline program, recently launched, involving an 8-inch pipline, covering a distance of 200 miles, and requiring 13,000 tons of steel. Steel requirements for the new plant have not been computed.

FORT WORTH, TEX. — Ri-Disc Valve Co. has been incorporated by H. A. Rike and W. C. Kirkwood, 2105 Fifth avenue.

GLADEWATER, TEX. — Gilliland Pipe Co. has been incorporated by J. W. Gilliland and Henry May.

HOUSTON, TEX.—Globe Box Factory, 2601 Commerce street, suffered $50,000 loss by fire recently to its building. B. F. Bonner is owner.

HOUSTON, TEX. — Borden Construction Co. has been incorporated by E. H. and M. M. Borden, San Jacinta National Bank building.

Minnesota

NEW ULM, MINN.—August Schell Brewing Co. is making many improvements to its plant, including installation of new bottling equipment, steam boiler with automatic stoker, two hot water tanks, a filtermass washer, and a 20-ton ice machine.

Wisconsin

BELOIT, WIS.—Beloit Metal & Iron Co. has filed articles of incorporation, through P. P. Bloom, C. C. Bloom, and L. L. Bloom.

SOUTH MILWAUKEE, WIS.—Line Material Co., maker of transmission line fixtures, transformers, etc., maintaining a branch factory in Oneida, N. Y., leased from the Dodge Mfg. Co., has purchased a building here and will make alterations and additions to plant and equipment. W. D. Kyle is president.

WATERTOWN, WIS.—G. B. Lewis Co., 426 Montgomery street, maker of apiary equipment and supplies, industrial stacking boxes, etc., is building a brick and steel factory addition, 40 x 120 feet.

North Dakota

FARGO, N. DAK.—North Dakota Metal Culvert Co., 501 Fourth street north, recently suffered loss to its plant.

Iowa

JANESVILLE, IOWA—Royer Mfg. Co., manufacturer of road maintaining machinery, has made extensive improvements to its factory and added snow removal equipment and a rotary power broom machine to its output.

MARSHALLTOWN, IOWA — Roberts & Oake, meat packer, is installing two 300-horsepower boilers, this addition being part of a $200,000 expansion program which is going on, in addition to the original expenditure of a like sum.

MARSHALLTOWN, IOWA—Marshalltown Sheet Metal Works, this city, has been incorporated to do a general business of selling and installing furnaces, and to do a general manufacturing business; C. M. Johannsen, Adolph Johannsen, and J. A. Smith compose the board of directors.

SIOUX CITY, IOWA — Kari Keen Products Inc. has been organized to manufacture tools and machine mechanisms of various kinds. C. A. Baxter is president, C. L. Parris vice president, I. J. Enger treasurer, and J. A. Jones secretary.

WATERLOO, IOWA—John Deere Tractor Co., manufacturer of farm tractors and other agricultural equipment and machinery, has made recent additions and improvements to the factory, including a tractor storage and shipping building, built at a cost of $48,000, a tractor testing building, costing $40,000, and many smaller improvements. Work has just been started on a 60 x 100 foot addition to the tractor assembly building, to be used for tractor wheel storage.

Pacific Coast

PORTLAND, OREG. — Bids were opened Jan. 27 for a 2-story reinforced construction addition to the plant of the Fields Motor Co., 107 Northeast Grand avenue.

DAYTON, WASH. — Rogers Construction Co. is building a storage and repair shop for care of the firm's road equipment.

SEATTLE—Golden Galice Mining Co. has been incorporated by R. A. Davenny and associates, 1333 Dexter Horton building.

SEATTLE — Byford Electric Hammer Co., 1402 Smith Tower, has been organized by Horace Byford and associates.

SPOKANE—Bishop Mfg. Co., 3534 Grand boulevard, has been incorporated by E. W. Bishop and associates to manufacture machinery appliances, plants, etc.

TACOMA, WASH. — Columbia Breweries Inc. has awarded a contract to J. W. Bailey Construction Co., Seattle, for the erection of a 3-story bottling plant, to cost $50,000. With equipment, the total expenditure will be $120,000.

WHERE-TO-BUY

BILLETS (Forging)
Alan Wood Steel Co., Conshohocken, Pa.
Andrews Steel Co., Newport, Ky.
Carnegie-Illinois Steel Corp., Pittsburgh-Chicago.
Central Iron & Steel Co., Harrisburg, Pa.
Heppenstall Co., 47th & Hatfield Sts., Pittsburgh, Pa.
Jones & Laughlin Steel Corp., Jones & Laughlin Bldg., Pittsburgh, Pa.
Midvale Co., The, Nicetown, Philadelphia, Pa.
Republic Steel Corp., Cleveland, O.
Standard Steel Works Co., Burnham, Pa.
The Stanley Works, New Britain, Conn. Bridgeport, Conn.
Timken Steel & Tube Co., Canton, O.

BILLETS AND BLOOMS (*Also Stainless)
Alan Wood Steel Co., Conshohocken, Pa.
Andrews Steel Co., Newport, Ky.
Bethlehem Steel Co., Bethlehem, Pa.
Carnegie-Illinois Steel Corp., Pittsburgh-Chicago.
Central Iron & Steel Co., Harrisburg, Pa.
Firth-Sterling Steel Co., McKeesport, Pa.
Inland Steel Co., 38 So. Dearborn St., Chicago, Ill.
Jones & Laughlin Steel Corp., Jones & Laughlin Bldg., Pittsburgh, Pa.
*Ludlum Steel Co., Watervliet, N. Y.
*Republic Steel Corp., Cleveland, O.
Standard Steel Works Co., Burnham, Pa.
The Stanley Works, New Britain, Conn. Bridgeport, Conn.
Tennessee Coal, Iron & Railroad Co., Brown Marx Bldg., Birmingham, Ala.
Timken Steel & Tube Co., Canton, O.
Youngstown Sheet & Tube Co., Youngstown, O.

BLAST FURNACE FITTINGS
Pollock, The Wm. B., Co., Youngstown, O.

BLAST FURNACE SPECIALTIES
Bailey, Wm. M., Co., 702 Magee Bldg., Pittsburgh, Pa.
Brosius, Edgar E., Inc., Sharpsburg, Pa.
Leeds & Northrup Co., 4901 Stenton Ave., Philadelphia, Pa.
Pollock, The Wm. B., Co., Youngstown, O.
Shoop Bronze Co., The, 344-360 W. Sixth St., Tarentum, Pa.
Steel Industries Engineering Corp., Empire Bldg., Pittsburgh, Pa.

BLAST FURNACES—See FURNACES (Blast)

BLOCKS (Chain)
Ford Chain & Block Co., York, Pa.
Yale & Towne Mfg. Co., 4530 Tacony St., Philadelphia, Pa.

BLOWERS
Coppus Engineering Co., 859 Park Ave., Worcester, Mass.
General Electric Co., Schenectady, N. Y.
Ingersoll-Rand Co., Phillipsburg, N. J.
Strong, Carlisle & Hammond Co., The, 1400 W. 3rd St., Cleveland, O.

BLUE PRINTING EQUIPMENT AND SUPPLIES
Bruning, Chas., Co., Inc., 445 Plymouth Ave., Chicago, Ill.

BOILER HEADS
Bethlehem Steel Co., Bethlehem, Pa.

BOILER TUBES—See TUBES (Boiler)

BOILERS
Murray Iron Works Co., Burlington, Iowa.

BOLT AND NUT MACHINERY
Landis Machine Co., Waynesboro, Pa.

BOLTS (*Also Stainless)
Bethlehem Steel Co., Bethlehem, Pa.
Carnegie-Illinois Steel Corp., Pittsburgh-Chicago.
Jones & Laughlin Steel Co., Jones & Laughlin Bldg., Pittsburgh, Pa.
Oliver Iron & Steel Corp., S. 10th & Muriel Sts., Pittsburgh, Pa.
*Republic Steel Corp., Upson Nut Div., 1912 Scranton Rd., Cleveland, O.
Russell, Burdsall & Ward Bolt & Nut Co., Port Chester, N. Y.
Ryerson, Jos. T., & Son, Inc., 16th and Rockwell Sts., Chicago, Ill.

BORING MACHINES (Horizontal)
Landis Tool Co., Waynesboro, Pa.

BOSH PLATES (Copper)
Lawrenceville Bronze Co., Bessemer Bldg., Pittsburgh, Pa.

BOXES (Annealing)
Pollock, The Wm. B., Co., Youngstown, O.
United Engineering & Foundry Co., First National Bank Bldg., Pittsburgh, Pa.
Wilson, Lee, Engineering Co., 1370 Blount St., Cleveland, O.

BOXES (Case Hardening)
Driver-Harris Co., Harrison, N. J.
Strong, Carlisle & Hammond Co., The, 1400 W. 3rd St., Cleveland, O.

BOXES (Open Hearth Charging)
Morgan Engineering Co., The, Alliance, O.
Pollock, The Wm B., Co., Youngstown, O.
Wellman Engineering Co., 7000 Central Ave., Cleveland, O.

BRAKES (Electric)
Clark, The, Controller Co., 1146 E. 152nd St., Cleveland, O.

BRAKES (Press)
Cincinnati Shaper Co., Elam and Garrard Sts., Cincinnati, O.

BRICK—(Insulating)—See INSULATING BRICK

BRICK (Refractory)—See REFRACTORIES, CEMENT, etc.

BRICK (Silicon Carbide)
Carborundum Co., The, Perth Amboy, N. J.
Norton Co., Worcester, Mass.

BRIDGE CRANES (Ore and Coal Handling) See CRANES (Bridge)

BRIDGES, BUILDINGS, VIADUCTS, STACKS
American Bridge Co., Frick Bldg., Pittsburgh, Pa.
Belmont Iron Works, 22nd and Washington Ave., Philadelphia, Pa.
McClintic-Marshall Corp., Bethlehem, Pa.
Ohio Structural Steel Co., The, Newton Falls, O.
Truscon Steel Co., Youngstown, O.

BUCKETS (Clam Shell, Dragline, Grab, Single Line)
Atlas Car & Mfg. Co., The, 1140 Ivanhoe Rd., Cleveland, O.
Harnischfeger Corp., 4411 W. National Ave., Milwaukee, Wis.
Industrial Brownhoist Corp., Bay City, Mich.
Link-Belt Co., 300 W. Pershing Rd. Chicago, Ill.
Wellman Engineering Co., 7000 Central Ave., Cleveland, O.

BUCKETS (Elevator)
Link-Belt Co., 307 No. Michigan Ave., Chicago, Ill.

BUILDINGS (Steel)—See BRIDGES, ETC.

BURNERS (Acetylene)—See TORCHES AND BURNERS

BURNERS (Automatic)
Kemp, C. M., Mfg. Co., 405 E. Oliver St., Baltimore, Md
Surface Combustion Co., 2375 Dorr St., Toledo, O.
Wean Engineering Co., Warren, O.
Wilson, Lee, Engineering Co., 1370 Blount St., Cleveland, O.

BURNERS (Fuel, Oil, Gas, Combination)
Best, W. N., Engineering Co., 75 West St., New York City.
Surface Combustion Co., 2375 Dorr St., Toledo, O.
Wean Engineering Co., Warren, O.
Wilson, Lee, Engineering Co., 1370 Blount St., Cleveland, O.

BUSHINGS (Bronze)
Cadman, A. W., Mfg. Co., 2816 Smallman St., Pittsburgh, Pa.
Gifford Engine Co., Eaton Rapids, Mich.
Rhoades, R. W., Metaline Co., 50—3rd St., Long Island City, N. Y.
Shenango-Penn Mold Co., Dover, O.
Shoop Bronze Co., 344-60 W. 6th Ave., Tarentum, Pa.

BUSHINGS (Oilless)
Rhoades, R. W., Metaline Co., 50—3rd St., Long Island City, N. Y.

BUSHINGS (Steel)
Gifford Engine Co., Eaton Rapids, Mich.

BUSINESS CARDS (Engraved)
Modern Card Co., 1153 Fullerton Ave., Chicago, Ill.

BY-PRODUCT PLANTS
Koppers Construction Co., 1438 Koppers Bldg., Pittsburgh, Pa.

CABLE GRIPS
Smith Devices 2245 No. 12th St., Philadelphia, Pa.

CADMIUM
The Udylite Co., 1615 E. Grand Blvd., Detroit, Mich.

CADMIUM PLATING PROCESS
The Udylite Co., 1615 E. Grand Blvd., Detroit, Mich.

CAR DUMPERS
Alliance Machine Co., The, Alliance, O.
Industrial Brownhoist Corp., Bay City, Mich.
Link-Belt Co., 300 W. Pershing Rd., Chicago, Ill.
Wellman Engineering Co., 7000 Central Ave., Cleveland, O.

CAR PULLERS and SPOTTERS
Link-Belt Co., 300 W. Pershing Rd., Chicago, Ill.

CARBIDE
Linde Air Products Co., 30 E. 42nd St., New York City.

CARBURIZERS
Houghton, E. F., & Co., 240 W. Somerset Ave., Philadelphia, Pa.

CARS (Charging)
Atlas Car & Mfg. Co., The, 1140 Ivanhoe Rd., Cleveland, O.
Morgan Engineering Co., The, Alliance, O.
Pollock, The Wm. B., Co., Youngstown, O.
Wellman Engineering Co., 7000 Central Ave., Cleveland, O.

CARS (Industrial and Mining)
Atlas Car & Mfg. Co., 1140 Ivanhoe Rd., Cleveland.
Bethlehem Steel Co., Bethlehem, Pa.
Pollock, The Wm. B., Co., Youngstown, O.

CARS (Scale)
Atlas Car & Mfg. Co., The, 1140 Ivanhoe Rd., Cleveland, O.

CASTINGS (Acid Resisting)
Cadman, A. W., Mfg. Co., **2815 Smallman St.,** Pittsburgh, Pa.
Chain Belt Co., 1660 W. Bruce St., Milwaukee, Wis.
Farrel-Birmingham Co., Inc., 110 Main St., Ansonia, Conn. 344 Vulcan St., Buffalo, N. Y.
International Nickel Co., Inc., 67 Wall St., New York City.
Link-Belt Co., 300 W. Pershing Rd., Chicago Ill.
National Bearing Metals Corp., 928 Shore Ave., Pittsburgh, Pa.
Shenango-Penn Mold Co., Dover, O.
Shoop Bronze Co., The, 344-360 W. Sixth St., Tarentum, Pa.
Wellman Bronze & Aluminum Co., 6017 Superior Ave., **Cleveland, O.**

CASTINGS (Alloy Steel)
Bethlehem Steel Co., Bethlehem, Pa.
Forging & Casting Corp., The, Ferndale, Mich.
Industrial Steel Casting Co., 2237 Water Works Drive, Toledo, O.
Link Belt Co., 300 W. Pershing Rd., Chicago, Ill.
National-Erie Corp., 15th & Raspberry Sts., **Erie, Pa.**
Pittsburgh Rolls Corp., 41st and Willow Sts., Pittsburgh, Pa.
Reliance Steel Casting Co., 2818 Smallman St., Pittsburgh, Pa.
Ryerson, Jos. T., & Son, Inc., 16th and Rockwell Sts., Chicago, Ill.
United Engineering & Fdry. Co., First National Bank Bldg., Pittsburgh, Pa.

CASTINGS (Brass, Bronze, Copper, Aluminum)
Aluminum Industries, Inc., 2348 Beekman St., Cincinnati, O.
Bethlehem Steel Co., Bethlehem, Pa.
Cadman, A. W., Mfg. Co., 2815 Smallman St., Pittsburgh, Pa.
Cramp Brass & Iron Foundries Co., Paschall Sta., Philadelphia, Pa.
Lawrenceville Bronze Co., Bessemer Bldg., Pittsburgh, Pa.
Morgan Engineering Co., The, Alliance, O.
National Bearing Metals Corp., 928 Shore Ave., Pittsburgh, Pa.
Shenango-Penn Mold Co., Dover O.
Shoop Bronze Co., The, 344-360 W. Sixth St., Tarentum, Pa.
Titan Metal Mfg. Co., Bellefonte, Pa.
Wellman Bronze & Aluminum Co., 6017 Superior Ave., Cleveland, O.

CASTINGS (Brass, Pressure)
Titan Metal Mfg. Co., Bellefonte, Pa.

CASTINGS (Electric Steel)
Farrel-Birmingham Co. Inc., 110 Main St., Ansonia, Conn. 344 Vulcan St., Buffalo, N. Y.
Industrial Steel Casting Co., 2237 Water Works Drive, Toledo, O.
Link Belt Co., 300 W. Pershing Rd., Chicago, Ill.
National-Erie Corp., 15th & Raspberry Sts., Erie, Pa.
West Steel Casting Co., 805 E. 70th St., Cleveland, O.

CASTINGS (Gray Iron, Alloy, or Semi-Steel)
Bethlehem Steel Co., Bethlehem, Pa.
Chain Belt Co., 1660 W. Bruce St., Milwaukee, Wis.
Cramp Brass & Iron Foundries Co., Paschall Sta., Philadelphia, Pa.
Erie Foundry Co., Erie, Pa.
Farrel-Birmingham Co. Inc., 110 Main St., Ansonia, Conn. 344 Vulcan St., Buffalo, N. Y.
Forging & Casting Corp., The, Ferndale, Mich.
Forest City Foundries Co., 2500 W. 27th St., Cleveland, O.
Link-Belt Co., 300 W. Pershing Rd., Chicago, Ill.
Midvale Co., The, Nicetown, Philadelphia, Pa.
Murray Iron Works, Burlington, Iowa
National Roll & Foundry Co., The, Avonmore, Pa.
Taylor-Wilson Mfg. Co., McKees Rocks, Pa.

CASTINGS (Heat Resisting)
Driver-Harris Co., Harrison, N. J.
Farrel-Birmingham Co. Inc., 110 Main St., Ansonia, Conn. 344 Vulcan St., Buffalo, N. Y.

CASTINGS (Magnesium Alloys)
Wellman Bronze & Aluminum Co., 6017 Superior Ave., Cleveland, O.

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Inquiries Steady; Demand Seen on Rising Trend

MOVEMENT of used and rebuilt tools of nearly all descriptions continues fairly brisk, although severe cold weather has served to delay shipments in some localities. Dealers are kept busy with inquiries and look for no pronounced let-down over the next few months.

Buyers for leading dealers in this type of equipment are on the jump continually these days, being forced to chase down all reports of machinery available for purchase. Scarcity of equipment in good condition is an added spur to buyers, whose lot is becoming anything but a happy one.

Occasional distress sales of plant equipment are bringing better prices, but usually are marked by a lack of real "buys" in the machinery classification. While the bulk of such equipment is picked up by those with facilities for rebuilding it for sale, some user-buyers are usually present and their influence acts to move bids higher than dealers would normally offer.

Speaking of the auction at the J. S. Mundy Hoisting Engine Co. in this department recently, reference was made to a previous auction sale at the plant of the F. B. Stearns Co. in Cleveland. The latter sale was in every way a success, as pointed out by Industrial Plants Corp., Columbus, O., which conducted the auction. Description of this sale was published in *Iron Trade Review*, predecessor of STEEL, April 17, 1930. Recent reference in this department to the fact that the auctioneer became disgusted with the bidding was in error.

However, bidding at auctions in the period from 1931-1934 was usually far from spirited, as was only natural. The sale to which reference was intended was at the old plant of the Cleveland automobile, on London road in Cleveland.

ONE MODEL 5021
B AUTOMATIC TEMPERATURE CONTROLLER

With motor complete made by Wilson-Maeulen Co., New York, price new $353.30. Only been used 5 times. Will sell or trade. Address Box 332, STEEL, Penton Bldg., Cleveland.

WANTED TO BUY

A small experimental steel melting unit of 25 to 75 lbs. capacity.

Address Box 340, STEEL
Penton Bldg., Cleveland

RAILS—"1 Ton or 1000"
NEW RAILS—5000 tons—All Sections—All Sizes.
RELAYING RAILS—25,000 tons—All Sections—All Sizes, practically as good as New.
ACCESSORIES—Every Track Accessory carried in stock—Angle and Splice Bars, Bolts, Nuts, Frogs, Switches, Tie Plates.
Buy from One Source—Save Time and Money.
'Phone, Write, or Wire
L. B. FOSTER COMPANY, Inc.
PITTSBURGH NEW YORK CHICAGO

1—82′ BORING LATHE

Capacity, 12″ diam. hole through 24″ diam. shaft, 40′ long; range of spindle speeds 14 to 84 R.P.M.; arranged for motor drive.

Priced low before removal to Chicago

LOUIS E. EMERMAN & CO.
1761 Elston Ave Chicago, Ill.

WANTED

1—Plate planer for beveling plate edges, with capacity for planing plates up to 2½″ and 3″ thick and 35 feet long.

1—Set Bending Rolls 10 feet between housings—to bend plates up to 1½″ thick. Must have drop end housing.

Address Box 341
Care "STEEL"
Penton Bldg., Cleveland, Ohio

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STEEL

The PENTON Bldg. CLEVELAND, OHIO

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Central Iron & Steel Co.	—
Chain Belt Co.	8
Chambersburg Engineering Co.	—
Chicago Pneumatic Tool Co.	—
Chicago Rawhide Mfg. Co.	18
Cincinnati Shaper Co.	4
Clark Controller Co.	85
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Cleveland Twist Drill Co.	—
Climax Molybdenum Co.	—
Cold Metal Process Co.	—
Columbia Electric Mfg. Co.	—
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Columbus Die Tool & Machine Co.	—
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Crane Co.	—
Criswell, James Co.	—
Crosby Co.	81
Curtis Pneumatic Machinery Co.	109
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Edison, Thomas A., Inc.	—
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Erdle Perforating Co.	78
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Fafnir Bearing Co.	—
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Farrel-Birmingham Co., Inc.	—
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Flinn & Dreffein Co.	110
Foote Bros. Gear & Machine Co.	—
Ford Chain Block Co.	93
Forest City Foundries Co.	113
Forging & Casting Corp.	—
Foster, L. B., Co., Inc.	115
Gardner Displays	—
General Electric Co.	59
General Electric Vapor Lamp Co.	—
Goodrich, B. F., Co.	—
Granite City Steel Co.	—
Grant Gear Works	—
Great Lakes Steel Corp.	—
Gulf Refining Co.	—
Hanna Furnace Corp.	112
Harnischfeger Corp.	—
Harrington & King Perforating Co., The	95
Hauser-Stander Tank Co.	—
Heald Machine Co.	—
Hevi-Duey Electric Co.	—
Hindley Mfg. Co.	107
Holcroft & Co.	—
Horsburgh & Scott Co.	77
Houghton, E. F., & Co.	—
Hubbard, M. D., Spring Co.	—
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Industrial Brown Hoist Corp.	—
Industrial Steel Casting Co.	113
Ingersoll-Rand Co.	—
Inland Steel Co.	—
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James, D. O., Mfg. Co.	54
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Johnston Mfg. Co.	—
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Kemp, C. M., Mfg. Co.	5
Kidd Drawn Steel Co.	—
King Fifth Wheel Co.	—
Koppers Construction Co.	—
Kron Co.	91
Laclede Steel Co.	112
Landis Machine Co.	53
Landis Tool Co.	10
Lansing Stamping Co.	114
Latrobe Electric Steel Co.	112
Lawrenceville Bronze Co.	90
Leitz, E., Inc.	—
Lewis Foundry & Machine Co.	—
Lincoln Electric Co.	—
Linde Air Products Co.	—
Link-Belt Co.	79
Lovejoy Tool Works	94
Ludlum Steel Co.	—
Macklin Co.	—
Mathews Conveyor Co.	—
Maurath, Inc.	95
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Mesta Machine Co.	7
Michigan Leather Packing Co.	—
Midvale Co., The	—
Mitchell, G. F., & Sons Co.	—
Moltrup Steel Products Co.	—
Monarch Steel Corp.	—
Morgan Construction Co.	—
Morgan Engineering Co.	—
Morrison Engineering Co.	—
Murray Iron Works Co.	—
National Bearing Metals Corp.	113
National Forge & Ordnance Co.	—
National Roll & Foundry Co.	—
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National Tube Co.	17
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Pittsburgh Letromelt Furnace Corp.	105
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Pittsburgh Tool Steel Wire Co.	93
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Ryerson, Joseph T., & Son Co.	20
Samuel, Frank, & Co., Inc.	—
Seneca Wire & Mfg. Co.	112
Seymour Mfg. Co.	—
Shaw-Box Crane & Hoist Co., Inc.	105
Shenango-Penn Mold Co.	—
Sherwin-Williams Co., The	—
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Square D Company	—
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Surface Combustion Co.	—
Taylor-Wilson Mfg. Co.	—
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Thomas Steel Co.	—
Thomson-Gibb Electric Welding Co.	110
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Columbia Steel Co.	
Cyclone Fence Co.	
National Tube Co.	
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Westinghouse Electric Mfg. Co.	—
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Wilson, Lee Engineering Co.	—
Worthington Pump & Machinery Corp.	—
Worth Steel Co.	—
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